THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LIV. SATURDAY, FEBRUARY 23, 1889. No. 8.

ORIGINAL LECTURES.

ACUTE PANCREATITIS.

A Consideration of Pancreatic Hemorrhage, Hemorrhagic, Suppurative, and Gangrenous Pancreatitis, and of Disseminated Fat-necrosis.

The Middleton-Goldsmith Lecture for 1889, delivered before the New York Pathological Society, Feb. 16, 1889.

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UNTIL the time of Clässen[1] the evidence of an acute inflammation of the pancreas was almost wholly theoretical, and was not controlled by any considerable number of anatomical observations. Mercury was known to produce salivation, and the watery diarrhœa following its use was supposed to be due to irritation of the pancreas.

Influenced by this and other considerations, Schmackpfeffer[2] having found certain alterations of the pancreas in a syphilitic woman who had been liberally treated with mercury, attributed her symptoms to the pancreatic changes. The latter he regarded as anatomical evidence of an acute inflammation. He describes[3] these changes as follows: "The pancreas was unusually dense, dry, and very much swollen; it was inflamed and red throughout, although more in the right than in the left side. Numerous drops of blood escaped from the cut surface. The duct was very much dilated, especially at its mouth. The gland weighed 5¾ ounces.

Some years later Neumann[4] stated that "death might take place within a few hours from a fatal metastasis of the buccal salivation to the pancreas. This happens when in the midst of profuse salivation the pulse sinks and quickens, or the swelling of the salivary glands subsides, and salivation is replaced by a green diarrhœa, while the skin is dry and shrunken." Under such circumstances the pancreas is found decidedly swollen, although but slightly reddened.

Clässen[5] knows of no observations in confirmation of Neumann's statement, and doubts its truth. He collects, however, a half-dozen cases, among them Schmackpfeffer's, of what he regards as fatal pancreatic inflammation, and from them he establishes the symptomatology of acute pancreatitis. The views thus obtained have essentially prevailed up to the time of Friedreich's article in Ziemssen's *Cyclopædia* in 1875.

The lesions found were as follows: In the second case, that of Juppin,[1] "a section was made through the pancreas. Its tissue was dense and friable. It was a third larger round than normal; it encircled two-thirds of the duodenum, which it compressed, and it affected the pylorus also. . . . The pyloric opening was almost entirely closed and the tip of the little finger could be introduced only with great difficulty and after repeated efforts. A vertical section through the pylorus showed it to be of almost cartilaginous density."

The third case is credited to Casper.[2] "All the organs of the remarkably handsome, though excessively fat, body were wholly normal with the exception of the pancreas. This was swollen to the size of a large fist, of cartilaginous density, firmly united to the duodenum, and in part to the stomach, and was of a brownish-red color. Its structure was not recognizable."

The fourth observation is also from Casper.[3] "The pancreas was so much enlarged that its head was a half hand's-breadth wide, much infiltrated with blood, very dense, its structure not recognizable. In consequence of the enlargement of the gland its shape was more globular then round.

Rahn is the authority for the fifth case.[4] The stomach was dilated "almost to bursting," and was filled with clotted blood. "In the middle of the abdomen there projected from the abdominal aorta a dense, scirrhous tumor as large as the fist. It was intimately united to the aorta, and so compressed it that when the aorta was opened the finger would not pass through the narrowed canal. The narrowed portion was immediately below the origin of the cœliac artery. On close examination of the tumor with reference to its origin, the head of the pancreas was found degenerated in this scirrhous mass, while the left part of the gland was in a wholly healthy state."

The sixth case is from Morgagni.[5] "The pancreas was unusually large, and contained round, tolerably large tumors of a density somewhat approaching that of cartilage."

To these is added another possible case, from Lieutaud,[6] in which, after an acute attack of gastric pain, fever, vomiting, anxiety, and frequent fainting, "the pancreas was found much enlarged, hard, and scirrhous throughout. The left kidney was in a state of liquefaction."

The first case may have been one of mercurial poisoning, the second was one of probable malignant disease; the third and fourth possibly of inflamed pancreas,

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[1] Die Krankh. d. Bauchspeicheldr., 1842.

[2] Diss. Inaug. de quibusd. Pancreatis Morbis, 1817, 26.

[3] Op. cit, 25.

[4] Von den Krankh. des Menschen. Berlin, 1836. Clässen, op. cit, 292.

[5] Op. cit., 193.

[1] Journ. de méd. chir. pharmac., 1791, lxcix. 73. Clässen, p, 200.

[2] Wochenschr. f. d. ges. Heilkde., 1836, 437. Clässen, op. cit., 207.

[3] Wochenschr. f. d. ges. Heilkde., 1836, 439. Clässen, op. cit., 213.

[4] Schirrhosi pancreatis diagnosis, 1796, obs. 1. Clässen, op. cit, 218.

[5] De sedibus et caus morb, 1765, iii. Epist. xxx., art. 10 Clässen, op. cit., 212.

[6] Hist. Anat. Med., 1767. i. obs. 1021.

but the evidence is insufficient to establish clearly the diagnosis. The fifth case may have been one of aneurism while the last two are more suggestive of malignant disease than of acute pancreatic inflammation.

The common symptoms were deep-seated pain near the stomach, producing a peculiar anxiety, restlessness, perhaps frequent fainting. The pain bore no definite relation to the vomiting or other symptoms, and was not increased in proportion to external pressure. The vomiting was forcible, more or less greenish material being expelled. The abdomen was moderately tense, there was slight fever, and the appetite was but little disturbed and might be increased. There was a moist tongue, thirst, and constipation.

The effect of Clässen's treatment of the subject may be seen nearly thirty years later in the statement by Wardwell,[1] that the prominent symptoms of acute pancreatitis are deep-seated, dull, epigastric pain, distention, sickness, and vomiting of a clear, greenish, viscid fluid; thirst, faintness, moist tongue, constipation, and slight pyrexia.

The first step toward an essential modification of these views was made by Klebs, in 1870.[2] He preferred to say nothing about inflammation of the pancreas, but described the various lesions which have been found in and around this gland, without attempting to show their possible relations to each other. He availed himself of the cases published by Portal, Hooper, Löschner, Haller, and Klob, and of one in his own experience, to associate pancreatic hemorrhage with severe symptoms, and to recognize the possibility of a hemorrhagic inflammation of the pancreas, already admitted by Rokitansky[3] as a very rare occurrence. Klebs further recognized that this hemorrhagic inflammation might possibly result in a purulent peripancreatitis with partial sequestration of the gland.

Friedreich,[4] however, undertook to present a complete picture of acute pancreatitis more in accordance with the anatomical treatment of Klebs than with that of Clässen. He availed himself of the cases used by Klebs; in addition, of one reported by Oppolzer, and of another under his own observation. He suggested that acute pancreatitis was either primary or secondary. The former appeared to have a tendency to hemorrhage in the pancreas or in its vicinity, in which case a termination in gangrene and ichorous peripancreatitis might occur. If the acute pancreatitis became suppurative, multiple, minute abscesses were to be found, which tended to become confluent, and to produce a resulting peritonitis.

The secondary variety of acute pancreatitis was either the granular degeneration found in infective diseases, or the circumscribed "metastatic" abscess. The possibility of a metastatic pancreatitis in the course of a parotitis was not to be absolutely denied, especially in virtue of the case reported by Schmackpfeffer.[5]

As there is a doubt of the existence of a pancreatitis in this case, it may be safely stated that there is no reason for admitting the existence of a metastatic pancreatitis secondary to inflammation of the parotid gland. It is evident[6] that an acute parotitis may arise during the course of a pancreatic inflammation. This single instance of association is presumably analogous to the occurrence of parotid inflammation in septic conditions of various origin.

Since Friedreich's anatomical recognition of an acute pancreatitis was based upon the consideration of four cases, he admitted his symptomatology of this affection to be neither precise nor complete. Furthermore, he seems[1] to include under the head of pancreatic hemorrhage those cases where this lesion is associated with necrosis and gangrene, and others where hemorrhage into the pancreas appears to be the sole cause of sudden death.

Klebs[2] had already recognized the existence of a suppurative peripancreatitis, and stated, presumably from his own observation, that in most instances this proceeded from lymph-glands. These were either the seat of metastatic abscesses, or were primarily diseased by traumatic agencies or injurious food. Such abscesses were regarded as occasional causes of thrombosis of the mesenteric and portal veins. He recognized a possible, eventual separation of the pancreas from surroundings by the extension of the suppurative process.

He thought it possible that the case of Haller and Klob,[3] already admitted as one of hemorrhagic pancreatitis, might belong in this series, and regarded that reported by Gendrin[4] as illustrative.

In the light of the observations published up to the time of his article, Klebs regarded as of doubtful existence any pancreatic abscess which did not arise from a peripancreatitis or from a suppurating cyst.

Important evidence as to the possible method of origin of a peripancreatitis was furnished by Chiari,[5] who found a round ulcer of the stomach communicating with the cavity of the omentum. The latter contained a spacious abscess with several openings into the jejunum. Lying free within this cavity was a shreddy mass of tissue, twelve centimetres long. It was brownish-black, friable, and presented the structure of the pancreas.

Four years later, Chiari published the report of a case[6] by Schlossberger, in which the sloughing pancreas was discharged through the bowels. He reported still another[7] of earlier occurrence, in 1862. The sloughing pancreas, discharged from the bowels, was brought to Rokitansky by Trafoyer.

The next communication of especial importance in connection with the subject of pancreatic inflammation is that of Balser.[8] He calls attention[9] to the presence of nodules and patches of necrotic fat tissue in the mesentery and in the contents of a cavity behind the mesentery. In the latter lay the pancreas also, attached only to the duodenum, and its lobules appearing as if macerated. A second case was reported by him,[10] in which there were patches of necrosis of the abdominal fat associated with similar appearances in the pancreas. In addition there was evidence of old and recent hemorrhage in the gland.

My own interest in this subject was first particularly aroused in 1876. At the request of Dr. J. P. Maynard, of Dedham, Mass., I made the post-mortem examination of a lady of uncertain age, not especially fat, who fell on the floor while apparently in her usual good health. She

[1] Reynolds's Syst. of Med., 1871, iii. 414
[2] Handb. d. path. Anatomie, 18[illegible]6, i. 2, 553.
[3] Lehrb. d. path. Anat., 3te Aufl., 1861, iii. 309, 242.
[4] Ziemssen's Handb. d. Path. und Therap., 1875, viii. 2.
[5] Page 1. [6] Case LVIII.

[1] Op. cit., 273. [2] Op cit. 556. [3] Case LVI.
[4] Page 177. [5] Case LVIII. [6] Case LIX.
[7] Case LVII. [8] Virchow's Arch., 1882, xc. 520.
[9] Case LXIV. [10] Case XXIV.

died within thirty minutes. In the meantime, she complained of pain in the lower part of the chest. Her respiration became hurried, the pulse feeble; a short convulsion occurred, and death took place. The abnormal appearances found were several nodules and patches, the largest of the volume of a walnut, of freshly extravasated blood at the periphery of the posterior portion of both lower pulmonary lobes. There were several patches, of considerable size, of submucous hemorrhage near the ileo-cæcal valve along the mesentery. The pancreas was thin and very flaccid, with occasional slight, subperitoneal hemorrhages. Section through the organ showed similar hemorrhages in its substance. The gland-lobules were of a reddish-gray color, the general surface spotted with white specks. Microscopic examination showed extensive fatty degenerations of the gland-cells, many fat-drops being exceedingly minute. The interstitial fat was frequently crystallized, and, at times, bundles of orange, acicular crystals (hæmatodin?) were found.

The cœliac plexus was examined and nothing abnormal found. The heart was contracted, its cavities contained mainly fluid blood. The mesenteric veins near the cæcum were injected. The liver and kidneys were injected; the spleen and suprarenal capsules were normal. Nothing abnormal was found in the brain or heart. It was considered, at the time, that the history of the case and the appearances found were best explained on the ground of Zenker's communication,[1] which will be soon referred to more particularly.

Since then it has been my opportunity, largely owing to the zeal of Drs. Gannett and Whitney, to see at least a dozen examples of pancreatic hemorrhages, with or without necrosis of fat tissue, and of necrosis of fat-tissue without pancreatic hemorrhage. I have been present at several of the post-mortem examinations at which the diseased pancreas has been found, and have demonstrated to the students of the Harvard Medical School many of the specimens which have been removed by my friends and colleagues.

Having thus been impressed with the importance of the subject, I take this opportunity of utilizing the material which has been gradually accumulated by Dr. W. F. Whitney, the curator of the Warren Anatomical Museum. The value of this material is greatly enhanced by the records of the clinical course of the disease in question, which have been furnished by those in charge of the patients. In addition, a collection of similar cases has been gathered from medical literature, which of late years has been especially prolific in this subject.

This paper will include a consideration of—

The liability of the pancreas to hemorrhage;

The association of hemorrhage with acute pancreatitis;

The occurrence of acute pancreatitis without hemorrhage; and—

The relation of acute pancreatitis to fat necrosis.

PANCREATIC HEMORRHAGE.

Although Kolb[2] regarded interstitial pancreatic hemorrhage as not rare, he found it only, and then not constantly, in extreme portal stagnation.

[1] Deutsche Zeitschr. f. prakt. Med., 1874, ii. 351.

[2] Oesterr. Zeitschr. f. prakt. Heilk., 1860, v. 529.

Spiess, however, in 1866,[1] reported to the Frankfort Medical Society a case[2] of sudden death due to an extensive, interlobular, pancreatic hemorrhage. His observation, though unique, escaped attention.

Klebs,[3] as already stated, had associated pancreatic hemorrhage with severe symptoms, and suggested that the hemorrhage might be due, in the absence of inflammatory changes in the interstitial tissue, to the corrosive action of the pancreatic secretion.

Zenker[4] then reported three cases as of fatal pancreatic hemorrhage. This lesion, however. existed in only two of them,[5] while in the third the hemorrhage was near the pancreas, in the hilus of the spleen. In this last case, and in one of the others, there was a striking venous injection of the solar plexus. He regarded this as the immediate cause of the sudden death, in accordance with the results of Goltz's experiment of cardiac paralysis by a blow on the frog's abdomen. He found in one of his cases a flabby heart with distended, empty cavities associated with marked injection of the abdominal organs. as in the frog experimented upon.

Prince[6] then published a paper on this subject, and Draper reported[7] a series of cases of sudden death from pancreatic hemorrhage.

Virchow, however, in most recent times, has stated[8] that nothing is more rare than hemorrhage in the pancreas.

The relative frequency and absolute importance of pancreatic hemorrhage are thus, unquestionably, a discovery of very recent origin. There are, however, a considerable number of recorded cases which show that sudden and unexpected death may occur, and a conspicuous hemorrhage be found in or near the pancreas as the sole, significant lesion. Such hemorrhage may occur in a previously diseased pancreas or individual, or it may take place when the person is apparently in his usual health, and the pancreas gives no evidence of any acute disease.

Both groups illustrate the liability of the pancreas to hemorrhage, but the conditions of its occurrence must vary in each.

In the first series the hemorrhage is associated with certain lesions of the pancreas of a chronic character. The earliest case of this sort, and one which has been quoted in evidence of pancreatic hemorrhage as a cause of sudden death, is that by Störck.[9]

A woman, æt. twenty-eight, during the catamenial period, was seized with severe vomiting. The flow was arrested; chills, dyspnœa, and palpitation followed. Although she gradually improved, an epigastric pulsation became apparent synchronous with the heart-beat. After the next menstrual period this pulsation became more severe, and a resistant pulsating tumor could be felt below the stomach. The tumor increased in size, and there was a sense of weight in the epigastrium. During the subsequent three and a half months the symptoms improved, the palpitation became less, and the tumor smaller and softer. Sudden weakness then occured, there was a rust-colored vomit, bilious stools,

[1] Schmidt's Jarhb., 1867, cxxxiv. 270. [2] Case I.
[3] Page 16. [4] Loc. cit. [5] Cases III. and IV.
[6] Boston Medical and Surgical Journal, 1882, cvi. 28.
[7] Trans. Assoc. of Amer. Phys, 1886, i. 243.
[8] Berl. klin. Woch., 1887, ix. 155.
[9] Annus Med. Second, 1762, 245.

sudden increase in the size of the tumor, rapid emaciation, and death,

The pancreas was found so large and heavy as to weigh thirteen pounds. It formed a sac filled with blood, partly grumous and partly laminated. The stomach, intestines, and omentum were displaced and compressed.

The evidence here presented is not sufficient to exclude the possibility of the chief lesion in this case being an aneurism of some artery in the vicinity of the pancreas. If Störck's view be accepted, that there was a hemorrhage within the pancreas, we have merely an illustration of what has been repeatedly found since his time, namely, hemorrhage into a pancreatic cyst.

The first indubitable case of this sort on record is to be found in the museum of the Harvard Medical School. It was published by Gross[1] from the MS. furnished by Dr. J. B. S. Jackson, and has also been published by the latter.[2]

For several months before the patient's death a tumor was noticed in the epigastric and right hypochondriac regions. There were also signs of advanced phthisis. The patient sat up every day until a short time before his death. The day before this took place he was found partially comatose. The tumor was a cyst of the pancreas, containing from ten to fourteen ounces of bloody-looking serous fluid without coagula.

The conspicuously hemorrhagic contents of pancreatic cysts have been also noticed by Anger,[3] Küster,[4] Bull,[5] Kocher,[6] Wölfler,[7] Hagenbach,[8] and Steele.[9] The case reported by Pepper[10] as one of fatal hemorraage from a pancreatic cyst admits of another explanation. The patient, an intemperate man, had frequently recurring intestinal hemorrhages for six months. He had two attacks of bloody vomit within five weeks, and, finally, an attack of gastro-intestinal hemorrhage, proving fatal in an hour. The blood came through an opening in the duodenum, a half-inch in diameter, near the common duct. A probe passed through the opening, entered a cavity in the head of the pancreas of the size of a walnut. Its walls were trabeculated, but "everywhere covered by a smooth mucous membrane;" numerous crystals of hæmatine were lying on the surface. "But little of the proper gland-tissue could be seen in this part of the organ, its place having been apparently usurped by dense, fibrous tissue. The same state of affairs is also observable in the body and tail of the gland, although in a less marked degree." It seems more probable, from the symptoms in this case, the seat of the cavity, the nature of the duodenal opening, and the history of pancreatic cysts, that this was rather a case of perforating duodenal ulcer with corrosion of the pancreas, than of pancreatic cyst opening into the duodenum.

[1] Elements of Path. Anatomy, 1839, ii. 209.

[2] Catalogue of Museum of the Boston Medical Improvement Society, 1847, 174.

[3] Bull. Soc. Anat. de Paris, 1865, xl. 192.

[4] Berliner. klin. Woch., 1887, ix. 154.

[5] N. Y. Med. Journal, 1887, xlvi. 376.

[6] Corresp. bl. f. Schweizer Aerzte, 1888, 279; British Med. Journal, 1888, i. 1297.

[7] Zeitschr. f. Heilkde., 1888, ix. 119.

[8] Deutsche Zeitschr. f. Chirurgie, 1888, xxvii. 110.

[9] Chicago Medical Journal and Examiner, 1888, lvi. 205.

[10] Proceedings of the Philada. Path. Society, 1870, iii. 182.

Doubts are also to be entertained concerning Rugg's case,[1] reported as one of fatal hemorrhage from the pancreas. In 1843 he had a male patient, æt. thirty-two years, who was rapidly recovering from a severe attack of acute rheumatism, but was up and dressed on the day before his death. He had frequently complained of severe pains in the epigastrium, but these had left him a few days before his death, and were replaced by acute pains in the left lumbar region. He was suddenly seized with agonizing pain in the latter place. His countenance became anxious, his lips pale, pulse imperceptible, skin cold and sweating, and death took place in an hour. The pancreas was somewhat larger and harder than usual, and had a cavernous rupture in its anterior surface, having all the appearance of an excavated ulcer. Its cavity contained a bloody substance, about the size of a walnut, in concentric layers. On longitudinal section of the organ several of these sanguineous deposits were found, varying in size from that of a horse-bean to a hazel-nut, in appearance like aneurismal deposits. A large quantity of blood was extravasated over the left kidney. The probability of this case being rather one of aneurismal than of pancreatic hemorrhage is very strong.

Finally, the somewhat irregular case of pancreatic hemorrhage reported by Satterthwaite,[2] may be mentioned. The patient, a man of thirty-six years, intemperate, syphilitic, had three attacks of jaundice in eight years. The last began five months before, and continued until his death. Toward the end of life he had a persistent bleeding from the lip, frequent intestinal hemorrhages, and constant drowsiness. The pancreas was distended beyond the usual size by a clot of blood. There was an extravasation of blood between the coats of the upper part of the ileum. The symptoms in this case are so different from those occurring in immediately fatal pancreatic hemorrhage, or in hemorrhagic pancreatitis, that the hemorrhage may best be attributed to the jaundice, like that from the lip and from the intestine. The pancreatic localization of hemorrhage in jaundice is exceptional, but need not be unexpected.

There remains, then, the following series of sixteen cases where pancreatic hemorrhage was apparently the sole cause of sudden and unexpected death, in persons not presenting evidence of other causes of death. Nine of them have occurred in or near Boston, and three of these are now, for the first time, published.

The following more detailed report of Case XV. is compiled from notes sent by Dr. Holt, of Cambridge, who made the post-mortem examination.

The patient, fifty-eight years of age, was a gentleman of leisure, thin, white-haired, his body looking like that of a considerably older person. He was at a club-dinner the evening before his death.

He awoke about two o'clock the following morning, complaining of severe pain in the bowels, nausea, and great prostration. He was pale, and his pulse was very weak. He soon vomited, became collapsed, and died within half an hour.

The duodenal half of the pancreas was of a bluish-red color, and was sharply contrasted with the yellowish-gray splenic end. The darker portion was infiltrated with

[1] Lancet, 1850, i. 608.

[2] New York Medical Record, 1875, x. 541.

SIXTEEN CASES OF PANCREATIC HEMORRHAGE.

No.	Authority.	Sex.	Age.	Antecedents.	Symptoms.	Lesions.
I.	Spiess, I., Schmidt's Jahrb. 1867, cxxxiv. 270.	M.	Adult.	.....	Sudden death.	Extensive, interlobular, pancreatic hemorrhage, and considerable hemorrhage behind the pancreas and spleen, between the peritoneum and abdominal wall.
II.	Klebs, Handb. d. Path. Anat., 1870, 1, 2, 555.	...	...	.....	Unexpected death.	Extravasation of fresh blood in the pancreas, no interstitial inflammatory changes, no thrombosis of large vessels near pancreas.
III.	Zenker, Deutsche Zeitschr. f. prakt. Med., 1874, ii. 351.	M.	48	Very fat. Heart disease in early life. Previously pulmonary disease. Three years ago slight digestive disturbance.	Awoke suddenly at night; unwell; desire to defecate, got out of bed, slight tendency to vomit. Returned to bed. Immediate death.	Entire pancreas of an intense, bloody color, and so fatty infiltrated that only fatty detritus was visible. Slight cardiac aneurism not in such a condition as to be accused of causing sudden death.
IV.	Zenker, loc. cit.	M.	...	Drunkard.	Found dead in the water. Well on the same day.	Hemorrhagic infiltration and fatty degeneration of the pancreas.
V.	Maynard and Fitz MSS. notes 1875, v. p. 26.	F.	Adult.	In usual health.	Sudden pain in lower chest. Hurried respiration, feeble pulse. Death in a half-hour.	Thin, flaccid pancreas, with slight subperitoneal and intraglandular hemorrhages. Cut surface dotted with white specks. Extensive fatty degeneration of gland cells. Fat-crystals and blood-crystals. Nothing abnormal in cœliac plexus.
VI.	Kollman, Aerztl. Intell. Bl., 1880, xxvii. 427.	F.	Adult.	Mitral stenosis. Pleurisy in left chest. Frequent abdominal pain. Able to work.	After a hearty meal frequent, solid dejections. Restless and anxious at night. Cold. Sense of constriction in chest. Ate breakfast with appetite. Died suddenly while walking with companions.	Injected pancreas surrounded as far as the spleen with extravasated blood. Hemorrhage in mucous membrane of the duodenum. 400 grammes of yellow fluid in left chest; 100 grammes in the pericardium. No appearance of fatty degeneration of the pancreas.
VII.	Gerhardt, V. Kollman, loc. cit.	F.	47	Bronch'l catarrh, emphysema, anasarca, ascites, albuminuria, cyanosis.	Died in collapse.	Inconsiderable, interlobular pancreatic hemorrhage. Tissue behind pancreas as far as the spleen infiltrated with blood. Duodenal mucous membrane almost black, and peritoneum over its convexity infiltrated with blood. Ecchymosis in mucous membrane of cæcum
VIII.	Reynolds and Gannett, Boston Med. and Surg. Journ,, 1885, cxii. 275.	M.	66	Abundant fat tissue.	Suffered from epigastric pain and constipation. Felt better next day, but in the evening found pulseless and collapsed. Death within 36 hours from the attacks of pain.	Pancreas enlarged one-half. Consistency diminished. Cut surface reddish-black from much extravasated blood nearly uniformly distributed. Bloodvessels and pancreatic duct unaltered.
IX.	Draper, Trans. Asso. Am. Phys., 1886, i. 143.	M.	45	Strong, rugged. Drunk at long intervals.	Found dead in chair, as if asleep. Seen well within 48 hours.	Pancreas infiltrated with and surrounded by extravasated blood.
X.	Draper, loc. cit.	F.	44	Addicted to liquor, though rarely drunk.	Found dead in bed, to which she went dressed, complaining of headache. Seen well within 30 hours.	Pancreas infiltrated with blood. Moderate retroperitoneal hemorrhage. Eight ounces of thin, red fluid in the peritoneal cavity.
XI.	Draper, loc. cit.	F.	26	Very fat, intemperate. Kicked in abdomen a week before death, but afterward appeared in usual health.	Went to bed complaining of great abdominal pain. Some hæmoptysis. 14 hours later cold, pale, pulseless. Mind clear. Complained of intense abdominal pain and of thirst.	Pancreas enlarged, sodden, soft, and slimy, filled with effused blood. Infiltrated blood behind mesenteric peritoneum behind and below stomach, between stomach and colon, over right kidney. Twenty-two ounces of thin, red fluid in abdomen. No peritonitis.
XII.	Draper, loc. cit.	M.	55	Exemplary habits	Well in the morning. Cramps in the forenoon. Found dead eight and a half hours after.	The abnormally large pancreas uniformly infiltrated with fresh blood. Subperitoneal tissue of each side of the pancreas, for about two inches, filled with blood.
XIII.	Draper, loc. cit.	M.	31	Intemperate.	While in good health, sudden, epigastric pain, nausea, collapse and death in 45 minutes.	Pancreas and adjacent tissue infiltrated with blood; with microscope, granular gland-cells and blood in interlobular tissue.
XIV.	La Fleur, Méd. News, 1888, liii. 80.	M.	50	Obscure dyspepsia for several years.	Severe epigastric pain, vomiting, collapse. Death in 24 hours.	Pancreas doubled in size, dark red, firm. The cut surface mottled with capillary hemorrhage, separated by a grayish red, translucent material. Fatty degenerated tubules and acini. Cellular tissue around pancreas blood-stained.
XV.	Driver and Holt, MSS. notes, 1888, v. p. 52.	M.	58	At a dinner party the night before his death. Thin.	Awoke at 2 A.M. with severe abdominal pain, nausea, weak pulse and prostration. Speedy vomiting, collapse. Death within half an hour.	Duodenal half of the pancreas infiltrated with blood. Each side of the heart contained a little fluid blood.
XVI.	Williams, MSS. notes, 1888, v. p. 55.	M.	70	Thin, temperate, always well.	Sudden epigastric pain, vomiting, weak pulse, slight epigastric swelling, collapse in a few hours, and death in 16 hours.	Tail of pancreas infiltrated with blood. Slight mesenteric hemorrhage. No evidence of peritonitis.

blood, which lay in the interlobular tissue, and could be readily squeezed from the cut surface.

Nothing abnormal was found in the brain. Both sides of the heart contained a little fluid blood; the valves, cavities, and muscular substances appeared normal. The stomach was empty, and in the intestines were the products of digestion. The liver was normal in size and appearance, and the cortex of the kidneys was paler than the pyramids.

I am indebted to Dr. Williams, of Charlestown, Mass., for the notes of Case XVI., which occurred in his practice. It is included in the series, with the full recognition that it is open to criticism since the post-mortem examination was necessarily partial and hurried.

The patient, a man seventy years old, was a night watchman. His health had been good, and he had wholly abstained from liquor since early manhood.

In the evening he was suddenly seized with colicky pain in the epigastrium. After a few hours the pain was almost constant, sharp, and cutting, extending toward the left and down nearly to the navel. The abdominal muscles, especially the recti, were very rigid. There was a slight, circumscribed, epigastric swelling at the left of the median line, extending from the costal margin to the navel. It was non-resistant, and not sensitive to pressure, which rather relieved than increased the abdominal pain.

There had been vomiting of a yellowish fluid. The pulse was 95, regular, small; the radial and temporal arteries were rigid; the skin dry and not cool. The vomiting persisted, and in six hours the patient was collapsed, but conscious. He then became restless, the pain was less agonizing, and death took place sixteen hours after the beginning of the attack.

Dr. Williams's diagnosis was pancreatic hemorrhage. After death he was allowed to make an incision over the tumor, and found the pancreas enlarged from the median line of the body to the splenic end of the gland. The enlarged portion was more easily cut than the rest, and infiltrated with blood. On section, two or three ounces escaped into the peritoneal cavity. Slight mesenteric hemorrhages had occurred. There was no evidence of peritonitis, nor was any blood found in the peritoneal cavity before the pancreas was incised.

The following case, reported by Zenker,[1] is not inserted in the table, since it is not, strictly speaking, one of pancreatic hemorrhage, though important in suggesting the possible manner of death in this affection.

A man, aged twenty-eight years, strong, very fat, and epileptic, was found dead, having been seen alive an hour before. There was a hemorrhagic infiltration in the hilus of the spleen, and a venous hyperæmia of the solar plexus. The abdominal organs were injected, and the pancreas was in a state of fatty degeneration.

The consideration of the above table shows that most of the individuals concerned were in their usual health at the time of the attack, or when last seen alive. They were invariably adults, and usually beyond the age of forty, when the age was given. Some were conspicuously fat and strong, while a few were weak and thin. Although several were of intemperate habits, others were not so reported, and two were exemplary in this respect.

[1] Loc. cit.

Two had complained of previous digestive disturbance, and one suffered from frequent abdominal pain. One had received a kick in the abdomen a week before death.

From the evidence here collected, there is evidently nothing in sex, habit, condition, or exposure, which will indicate the likelihood of pancreatic hemorrhage.

The cases and data are insufficient in number and detail to permit an exact clinical picture of this affection which shall be of especial value in differential diagnosis.

We learn that pain was an early symptom in nearly one-half of the cases; that it was usually severe, and might be intense, and was to be found in the abdomen or lower chest. Although mention is made of its presence in the epigastrium in one-fifth of the cases, this region is not conspicuously designated as the seat. On the contrary, there may be little or no pain, or merely a sense of constriction of the chest. Nausea or vomiting is but occasionally mentioned; constipation or a desire for frequent stools is still more rarely noted.

The most constant symptoms are those of collapse, and are more or less intense and more or less prolonged.

Death may take place within a half-hour after the onset of the symptoms and may be delayed for thirty-six hours. It is questionable in the latter instance whether the case should not, more properly, be included under the head of hemorrhagic pancreatitis than of pancreatic hemorrhage.

The appearances found after death are conspicuously of hemorrhage within and near the pancreas.

The gland may be of normal size, or enlarged, and its density may not be modified, or the pancreas may be flaccid, soft, and friable. The hemorrhagic infiltration is to be found in the subperitoneal tissue around the pancreas as well as in the interstitial tissue of the gland. The former may be continued into the omentum and mesentery, behind the colon and into the perinephritic fat-tissue. The entire pancreas may be infiltrated, or either half, or the central portion alone may be conspicuously involved. The hemorrhage is usually diffused, but it may be in numerous patches, both beneath the peritoneal investment and in the interlobular tissue. The color and moisture of the cut surface indicate that the extravasation is recent. It may take place into a normal pancreas or into one which is either fatty infiltrated, or fatty degenerated, or into one which shows a granular condition of the epithelium.

In a single instance evidence of an older hemorrhage was to be found in the presence of round, orange-colored bundles of acicular crystals. In the same pancreas were also to be seen colorless, acicular crystals, probably of fat, in clumps visible to the naked eye, corresponding to the appearances to be described under fat-necrosis. The microscopic examinations of one of Draper's cases showed occasional patches of hemorrhage within the lobules, although the infiltration was essentially in the interlobular tissue.

Hemorrhages might also be found in the wall of the duodenum and cæcum, and in the lungs in a single instance.

Although the splenic artery is reported to have been tortuous in one case, there is no evidence in any of a circumscribed aneurism. The splenic vein, when examined, was free from obstruction.

The conditions found by Zenker, viz., injections of the

portal venous system and of the capillaries of the solar plexus, with distended and empty cardiac ventricles, were not generally met with.

Fatty degeneration and fatty infiltration of the pancreas were not necessarily present in these cases, and frequently occur without a trace of hemorrhage.

The seat, extent, and rapidity of the bleeding suggest that it is rather arterial than venous, and no evidence of venous obstruction has been found. Such hemorrhages are most likely to be of aneurismal origin, but aneurisms have not been discovered. An embolic source has been sought for in vain. It is possible that the pancreatic secretion may have corrosive properties, as suggested by Klebs, in which case the condition should occur oftener. Suggestive evidence in favor of this view is the fact, well known to demonstrators of anatomy, and called to my attention by my colleague, Dr. Mixter, that arterial injections are likely to break through and escape in the region of the pancreas.

Hemorrhages in a diseased or dead pancreas might be thus explained, but in the great majority of the cases collected there is no sufficient evidence of such disease. It is also possible that the hemorrhage may be of nervous origin as in the pulmonary infarctions sometimes associated with cerebral lesions.

The only fact in favor of this view is the association of such pulmonary nodules with the pancreatic hemorrhages in one case. This observation, compared with the relative frequency of pulmonary hemorrhages of apparent, central, nervous origin, makes the single instance of but little value as evidence.

That fat-necrosis is not a cause for such hemorrhage is obvious from its presence being suggested in only a single instance.

It is evident that the first step toward a more accurate knowledge of the immediate cause of this affection must lie in a more careful search for the actual source or sources of the leak.

(To be continued.)

ORIGINAL ARTICLES.

THE PREVENTION OF SUMMER DIARRHŒA AMONG INFANTS, VIEWED IN THE LIGHT OF THE LESIONS.[1]

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THE purpose of this paper is to call attention to the fact that many of the so-called dyspeptic intestinal catarrhs of infancy, commonly looked upon as merely functional in character, produce lesions of considerable moment. These lesions are of importance, not so much in their immediate effects as in their relation to the severer forms of disease, particularly entero-colitis.

My attention was first drawn to these cases by two autopsies made last summer upon infants ten months old. One child died of acute pneumonia without intestinal complications. Throughout the large intestine the solitary follicles were very much increased, both in size and in number. In some places they were so numerous as nearly to cover the mucous membrane. This enlargement was at the expense of the rest of the mucous membrane. The follicles were eroded at their summits in many places, and looked as though they were beginning to ulcerate. Some of these erosions might have been produced accidentally in mounting the specimen, but many were present when it was removed from the body.

During the first five months of life, the mother stated that the infant had never had normal movements from the bowels; the passages were green or greenish-yellow, nearly always containing mucus, but were never frequent, at most three or four daily. The child was nursed entirely, and as the general health did not seem to be affected, and it gained steadily in weight, the mother did not think this intestinal catarrh of sufficient importance to call the resident physician's attention to it, although he saw the infant daily. The passages gradually became normal without treatment, and during the last five months before death had continued so.

The second case was that of an infant who was injured by falling from a window, and died within an hour. In this colon almost the same condition as seen in the first case was found to exist. The patient had never suffered from acute diarrhœa, but for nearly three weeks before death its stools had been very much of the nature previously described. Nor in this case had the mother regarded the fact as of any importance.

Microscopical examination in these cases revealed very slight catarrhal changes, but the important feature was the great enlargement of the solitary follicles.

Further experience in the examination of the intestines in patients dying from other diseases, usually pneumonia, confirmed the impression made by the first two cases, viz., that a dyspeptic intestinal catarrh (I use this term for want of a better) produces, when it is allowed to run on, marked alterations in the walls of the intestine.

If we examine a child's intestine some months after a sharp attack of entero-colitis, we find a very similar anatomical condition.

In cases of acute entero-colitis, dying after ten or twelve days' illness, the most constant change found is swelling of all these solitary follicles with, in many places, the formation of small circular ulcers from the breaking down of these follicles.[1] We conclude then that this condition of the solitary follicles such as we have described as occurring in dyspeptic catarrh, has a very intimate relation to follicular colitis. We may, perhaps, be justified in regarding

[1] Read before the New York State Medical Society, February 5, 1889.

[1] Photographs of specimens illustrating these lesions were shown.

it as identical with the first stage of the ulcerative process. The swelling in both cases is most likely due to the same cause, the absorption of ptomaines produced by the intestinal decomposition.

The intestines of infants are normally peculiarly rich in lymphoid masses, which, in disease, proliferate with great rapidity. These lymphoid nodules play a very important part in the pathology of the intestines in infancy. The enlargements take place here from slight irritation when continued, just as in the lymphatic glands of the neck; all the more readily if the patient is delicate or cachectic.

Turning now from the pathological to the clinical side of the question, what do we find?

Meinert, of Dresden, in a paper published last year, and extensively quoted, states that of four hundred and seventy-nine fatal cases of diarrhœal disease occurring in that city "seventy-one per cent. had previously healthy digestive organs." His information was obtained from the physicians who treated the cases and gave the certificates of death. The information of physicians under such circumstances we may safely assume would relate to acute or severe forms of gastro-intestinal disease, since mothers do not, as a rule, attach any importance to the dyspeptic intestinal catarrh we are considering. We cannot, therefore, it seems to me, attach any importance to Meinert's statistics as bearing upon the point under discussion.

In the New York Infant Asylum we have under close observation nearly four hundred children, most of them from the time they are a few weeks old until four years old. Our experience there has been that the great majority of all severe and fatal forms of entero-colitis in summer are preceded often for weeks by a "dyspeptic catarrh." Very often, I am sorry to say, this fact is not discovered until severe symptoms have developed, so little importance do the mothers attach to the disorder, particularly if the infant happens to be teething.

An idea of the frequency of follicular ulceration may be gained from the following statistics: Of fifty-seven autopsies I have made recently upon children dying from diarrhœal diseases, follicular ulceration existed in nineteen, or thirty-three per cent. of the cases. In almost every case the solitary follicles were very much enlarged. These cases presented clinically about all the types met with, and since they were, with but few exceptions, taken consecutively in an institution where all fatal cases come to an autopsy, they may be assumed to represent pretty fairly the frequency of the different lesions. (I need scarcely say that cases of tubercular ulceration have not been included.)

I will not enter here upon the discussion of the subject of intestinal decomposition and the development of abnormal bacteria, not because I underestimate its importance, but because my present purpose is to emphasize the other aspect of the question. The lesions, while no doubt aggravated and possibly primarily caused by the bacterial growth, when once present favor it to a marked degree.

It has been too much the fashion recently to think only of intestinal decomposition and not at all of the lesions with which it is so intimately related.

I have spoken chiefly, so far, of changes in the solitary follicles. They are never found unaccompanied by catarrhal changes, but the latter are in most instances of a much milder type and not likely to be so persistent. Follicular changes are slow in disappearing. This explains the long continuance of what are apparently very mild cases of intestinal catarrh, and the frequent relapses after more acute attacks.

The practical bearing of the foregoing remarks is evident:

The treatment of follicular ulceration of the intestine is extremely unsatisfactory. I believe that the great majority of these cases are fatal. Certainly, I have never seen at autopsy in a child anything which resembled a cicatrized follicular ulcer.

Successful treatment must be in the nature of prevention.

Prevention must have regard to all the milder intestinal catarrhs.

Regarding neglected diarrhœas during dentition, so much has been said recently that it is scarcely necessary to enter here again a protest. There is to my mind no more reason why an intestinal catarrh should not be treated, and, if possible, cured during dentition than at any other time. The fact that a child with whooping-cough is extremely liable to bronchitis and pneumonia has never been given as a reason why these complications should not be treated promptly and energetically when they arise.

Is an intestinal catarrh ever salutary? This is questionable. A number of loose movements may be of advantage to expel undigested food or other irritating materials from the intestine, but that a persistent intestinal catarrh, even if not severe, is an advantage to any child at any period remains to be proven.

The medical profession should take strong ground against the prevalent popular opinion, that so long as the general health is not affected, an intestinal catarrh is not only of no importance, but may, during bronchitis or dentition, even be beneficial, and that to cure it might be injurious.

It is in such cases as these that though amenable to proper treatment in the earlier stages, when allowed to run on, as they often are for weeks or even months, the foundation for grave and even fatal forms of diarrhœal disease is often laid.

The prophylactic treatment involves then the early recognition and intelligent treatment of all the forms of dyspeptic catarrh; in other words, it

means that we must secure proper digestion, and this depends chiefly upon proper feeding.

Out attention has been repeatedly called of late to the importance of seeing that our milk and other infant foods are pure and free from germs and putrefactive products. This is all important. Another danger which has not been often enough emphasized is overfeeding.

During the past two years I have been trying to get at some exact data regarding the proper amount of food which an infant, who is artificially fed, should receive at the different periods. This has been studied, first, by measuring carefully at autopsies the capacity of the stomach; and, secondly, by weighing healthy infants who were nursed at proper intervals, before and after they were put to the breast.

While I have not yet accumulated sufficient statistics for publication, still enough has been learned so far to show that the figures given in most of our books are altogether too large, and that the vast majority of hand-fed infants are *very greatly overfed.*

Difficulty and failure may result from this fact where every other condition for success has been attended to.

In conclusion I would emphasize the following points:

1. Children should not be overfed at any time, but especially not in summer.

2. At this season, also, every dyspeptic catarrh should be attended to; many of these are promptly curable by merely clearing out the intestine and then cutting down the quantity of food.

3. Should an intestinal catarrh, even a very mild one, continue for two or three weeks, one may be pretty certain that he has something more than a functional disorder to deal with.

4. Every mild catarrh should be looked upon as the possible precursor of a severe type of intestinal disease, either near or remote.

5. In the treatment of all diarrhœal diseases it should be borne in mind that there is something more to be considered than the bacteria and the products of decomposition, viz., the anatomical changes.

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THE DISORDERS OF MENSTRUATION.[1]

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IT is a peculiarity of the functions of the body that, when performed normally, they are performed painlessly and without the knowledge or consciousness of the individual. When an individual becomes aware that this or that function is being performed —that is, when his attention is attracted with an intensity which he cannot dismiss, his emotions being involved to any degree between simple discomfort and the most diabolical pain—there is no question that one of the functions is deranged, disturbed, disordered.

I do not know whether the argument has ever been made that, since it was once said to woman, "I will greatly multiply thy sorrow and thy conception, in sorrow thou shalt bring forth children," therefore it follows that menstruation should be included in the primal curse. Certainly "parturition hath few pleasures," but it cannot be argued from that fact that menstruation should abound in pain.

It has been asserted by various authorities, more as a matter of personal belief and opinion than as a fact founded upon anatomical or physiological conditions, that menstruation is, or always should be, attended with more or less pain; but, with all deference to such authority, that is not my belief—indeed, if it is normally accomplished, it should be as painless as digestion, or secretion, or assimilation. In this opinion I am in accord with Meadows, who made an elaborate discussion of this question in the Harveian Lectures for 1881 (see *Med. Press and Circular*, xxxii. 487).

Menstruation, in its simplest meaning, signifies a discharge of blood, epithelium, and glandular secretions from the uterus, mingled with more or less of the secretions of the vagina and vulva, recurring each lunar month, continuing from three to six days, due to a stimulus which has not yet been absolutely determined, which produces congestion of the entire genital apparatus, and attended by both direct and reflex phenomena which seem to depend mainly upon the congestion. From this definition as a basis, all the irregularities of menstruation may be wrought out.

There have been much patient work and ingenious speculation in regard to the process which actually occurs with menstruation. The subject was deemed of so much importance that a special discussion of it occupied a portion of the attention of the International Medical Congress held at Paris, in 1867, many valuable papers being read and discussed.

Physiologists and clinicians have alike failed to settle conclusively whether the entire mucous membrane is shed with each recurring menstrual epoch, or only certain epithelial layers (Leopold, John Williams, Möricke, Wyder, and others); whether the menstrual discharge means an aborted decidua (Pouchet, Ercolani, Tarnier, Putnam-Jacobi); what may be the influence and bearing of the Fallopian tubes in the matter (Harley, Tait), and many other important questions, into the merits of which it is not intended to go at this time. Beigel's theory concerning menstruation is that it is due to an im-

[1] Read before the New York State Medical Society, February 6, 1889.

pulse in the genital sphere, an expression of which is sexual excitation, just as there is a regular expression of need for rest, food, etc. Hyperæmia follows, especially in the pelvic organs, and menstruation is the result.

Such a theory is too abstract and vague, and demonstrates nothing. A more reasonable theory is that of Pflüger, which makes menstruation dependent upon the maturation of the ova. As the Graafian follicle swells, vasomotor nervous influences are excited, which become diffused through the vascular system and cause congestion. The congestion involves the ovarian circulation, and contributes to the bursting of the Graafian follicle, the liberation of the ovum, and the consequent hemorrhage. This theory is also unsatisfactory, for it requires that ovulation should be attended by external hemorrhage, and it is not impossible that one may occasionally be entirely distinct from the other. Upon this point Dalton ("Report on the Corpus Luteum," *Trans. Amer. Gyn. Society*, ii. p. 111) remarks: "If we regard the rupture of an ovarian follicle and hemorrhage from the uterus in menstruation as two phenomena normally coincident, excited by a common cause, and both subservient to the same general function, we must still recognize the possibility of either one being deranged independently of the other" (p. 137).

Pouchet, who devoted a considerable portion of his life to the investigation of the subject of menstruation, leaving a magnificent memorial of his work in his *Théorie positive de l'ovulation spontané*, was the first one, so far as I can ascertain, to recognize (1847) the analogy between the mucous membrane which is shed from the uterus of all unimpregnated women, to a greater or less extent, each month —the *decidua menstrualis*, and the decidua which forms an enveloping membrane to the fœtus. Or, perhaps, it is more correct to say that he recognized that a decidua is formed each month, which is cast off if impregnation does not occur. His theory of menstruation, like Pflüger's, is that it is dependent upon ovulation, and that the commotion aroused by the maturation of ovules not only excites the genital apparatus, but reacts upon the whole individual (*Op. cit.*, p. 201).

Goodman opposes the ovular theory (*Trans. Amer. Gyn. Society*, ii. p. 650) on the ground that menstruation is presided over by a law of monthly periodicity, which is the resultant and exponent of recurring physiological acts. This law is manifested only in the economy of the female, and in connection with the function of menstruation. He believes that the process by which the monthly cycles are accomplished is seated in the ganglionic nervous system.

Whatever be the correct theory as to the impulse which causes the periodical ovarian congestion, and coincidently the congestion of the other pelvic organs, the most superficial examination of the ovaries shows a relatively extraordinary system of arteries, which one could hardly conceive, by any possibility, to be necessary for the ordinary nutrition of the organs; and, hence, they could only be designed for repeated fluxions and engorgements. The great plexuses of veins contiguous to the ovaries, in the broad ligaments, testify also of the volume and activity of this portion of the circulation, and the possibilities for its derangement. Together with these facts must also be borne in mind the wonderful nerve supply of the ovaries by the renal, the ovarian, and the superior aortic plexuses. Therefore, given a highly congested and engorged ovary, and direct or indirect nerve communication with the most important structures and organs of the body, we can readily understand why so many women are in such a condition of unstable equilibrium with each recurring menstrual epoch, and why so many disturbances in parts remote from the ovaries are properly referred to them as the *fons et origo*.

The argument has been made that the function of menstruation is one which has been engrafted upon women as a result of civilization (Stirton, *Glasgow Medical Journal*, January, 1887, p. 1). In so far as this implies that under favorable environment, which is a very comprehensive term, women menstruate with less inconvenience, and likewise give birth to more and healthier children than under less favorable environment—that is, in the savage or barbarous condition, it is probably true, just as in stock-raising and breeding the results are much more satisfactory, in every way, when the creatures are well-fed and housed; but we must not forget that man is the end of the scale in evolution, and that the higher intellectual faculties seem to be developed at the expense of the lower animal ones. A fish has myriads of offspring, an elephant perhaps one. Your Shakespeares, and Washingtons, and Newtons, and Napoleons, and Goethes, and Carlyles have not been prolific. So of the George Eliots, the Madame de Staels, and the Elizabeth Brownings. That is to say, the greatest intellectual development in women is not favorable to fecundity, and probably is not favorable to ovulation, though the latter statement remains to be proved. The congestions in such women which preponderate are cerebral rather than pelvic; therefore, civilization in its most complete development may be unfavorable to menstruation. Certainly menstruation is not a flower of *modern* civilization, for in almost all nations and races which have left records of their habits and customs this function is referred to. The Bible record of its existence among the ancient Hebrews is clear and explicit, and it is plain that it was not a rudimentary function then.

Instead of regarding menstruation as an engraftment upon civilization, it would seem more reasonable to consider it as the development and perfection of a function associated with the reproductive system which has been observed with greater or less distinctness in almost every variety of animals the habits of which have been subjected to careful study. The testimony in this direction is most abundant and most convincing. The females of certain insects exhibit decided changes of color during the breeding season. In reptiles and fishes the period in which the eggs are deposited is marked by a certain degree of excitement and by hyperæmia of the orifices of the generative canal. Laycock observed that tortoises exhale an odor of musk, and lizards secrete an odorous, fatty liquid when the sexual appetite is aroused, and Darwin observed that during the breeding season the anal scent-glands of snakes and lizards were in active secretion. (See Wiltshire on "Comparative Physiology of Menstruation," *Journ. Comp. Med. and Surg.*, iv. 28; v. 58, 163, 254.) Among birds the reproductive season is marked by brighter plumage in the female than at other times.

Ascending in the scale, we find not only that the sexual appetite is aroused with something like periodicity, but that it is accompanied with more or less discharge from the generative passages, in which the sanguineous elements increase the higher we advance in the scale. With wild animals the sexual appetite is more intense when food and shelter are sufficient. In some of the domestic animals it recurs with a sanguineous or sanguino-mucous discharge with almost as great regularity as in women, and has been thus observed in mares, asses, ewes, sows, bitches, and cats. With animals having hollow uteri the external hemorrhage is less profuse than in those in which the uteri are thick and nearly solid; therefore, while the transudation into the uteri of bitches, sows, and cats may be abundant, the external hemorrhage may be quite insignificant.

In those primates in which the womb most resembles that organ in woman—that is, in the monkeys—the external hemorrhage is quite similar to that which occurs in woman. This fact has repeatedly been observed in monkeys kept in zoölogical gardens, and the bleeding has sometimes been so profuse as to excite marked concern on the part of their keepers. Buffon mentions eleven varieties of apes, baboons, and monkeys, in which menstruation had been observed. To mention, in addition, the names of Cuvier, Saint-Hilaire, Ehrenberg, and Raciborski as observers of facts similar to the foregoing, is sufficient to show that the subject has received critical attention from the most careful and eminent investigators.

Among wild mammalia the analogue of menstruation was observed by Bartlett, a keeper of the zoölogical gardens in London, in elephants, hippopotami, zebras, jackals, and monkeys. Saint Cyr and Fleming, distinguished veterinarians, have published the results of their observations as to the existence of a sanguinolent œstral discharge in the domestic animals resembling the catamenia in women, and they maintain that though it may not be so invariable, so copious, or so well defined as in women, this fact is often due to its retention in the vagina and its passage outward with the urine. Modern obstetricians and clinicians, including Velpeau, Trousseau, Cazeaux, and Tarnier, have all observed the analogy between menstruation in woman and a periodic flow in other mammalia, especially in monkeys and the domestic animals.

It would, therefore, seem warrantable to conclude with Wiltshire, from whose admirable lectures most of the foregoing facts have been obtained (*op. cit.*), that menstruation agrees with other functions of the animal economy in displaying subordination to the law of evolution. It may be indebted to civilization for certain fostering influences, but it does not originate in civilization but in a law which applies to the reproductive system of vast series of types and forms of animal life.

If this review of the comparative physiology of menstruation has seemed tedious, it is hoped that it may not be valueless as an introduction to the consideration of the abnormalities of the function.

Normal menstruation, then, implies a flow of blood sufficient to relieve congestion—but not enough to cause weakness or exhaustion, unaccompanied with pain, by way of the genital passages. Conversely, abnormal menstruation implies an insufficient flow of blood, or an excessive flow—these terms being relative, for *insufficient* and *excessive* vary greatly with individual condition; or it may mean a flow that is accompanied with pain, or proceeds by other channels than the generative passages.

Disorders of menstruation may, therefore, be classified as follows:

1. Amenorrhœa, absence of the menstrual flow.
2. Dysmenorrhœa, the condition in which the menstrual flow is obstructed.
3. Oligomenorrhœa, scantiness or insufficiency of the menstrual flow.
4. Polymenorrhœa, excessive menstrual flow.
5. Atopomenorrhœa, menstruation or a menstrual flow which is out of place, or unnatural, or unwonted. This term corresponds with the expression vicarious menstruation, and its equivalents, ectopic menstruation (Barnes), ataxie menstruelle (Raciborski), xénoménie (Flamant).

The terms metrorrhagia and menorrhagia have been used to signify, respectively, excessive bleeding from the womb irrespective of menstruation, and excessive menstrual flow. I have introduced the

term polymenorrhœa as a substitute for menorrhagia.

The classification which has heretofore been in use, is that which was adopted by Henry Bennett (see *Lancet*, 1852, i. 35, 65, 215, 328, 353) and others, and seems to me to be deficient in definiteness.

Inasmuch as menstruation is influenced to so great a degree by such conditions as race peculiarities, nervous impulses, blood-pressure, heart force, and resisting power of vascular walls—internally, and atmospheric pressure, humidity, heat, cold, and wind currents (that is, by meteorological elements)—externally; we can readily understand why its equilibrium should be so unstable—indeed, there is probably no function that is so delicately poised, which accounts for the fact that we see so many illustrations of menstrual disorders and disturbances.

Certain general principles are usually admitted by those who have investigated this subject, and among them are the following:

1. Races or tribes that are least removed from animals most resemble animals in respect to this function. Thus Stirton (*Glasgow Med. Journ.*, 1887, p. 1) mentions an aboriginal and very degraded tribe in South Africa, of which the women menstruate only at irregular periods. When menstruation is first established the discharge is merely an abundant mucous secretion, and only after indiscriminate intercourse has taken place for some time, does blood appear with the menses, and then only in small quantities.

2. So-called nervous women, or women whose nerves are very readily stimulated or excited, seldom menstruate without discomfort. Such women frequently suffer from dysmenorrhœa, many from oligomenorrhœa. A sudden emotion of joy, fear, or sorrow may check their flow; or it may be brought on prematurely or profusely by lascivious thoughts.

3. Influences located in the vascular system may, in themselves, be sufficient to determine great abnormalities in menstruation. A weak heart forces too little blood into the pelvic channels, the blood-pressure is slight, and the hemorrhage is correspondingly small. Or the heart works violently; as the time for menstruation recurs there is high blood-pressure with abundant power to overcome the resistance of the vascular walls, and the hemorrhage is profuse.

4. Great elevations, in which the atmospheric pressure is greatly reduced, must favor profuse menstruation as the pressure in the engorged pelvic vessels becomes greater than the external pressure. This remark applies more particularly to sudden removals to and short residence in such localities, for acclimation may be readily acquired if no serious disease involving the vascular system exists—in fact, in certain mountainous districts of France and Switzerland it has been observed that the native women are prone to suffer from irregular and scanty menstruation, notwithstanding the low atmospheric pressure.

5. A humid atmosphere is frequently a concomitant and probably a cause of amenorrhœa, or dysmenorrhœa, or oligomenorrhœa, on account of the difference between the pressure of the gases and fluids within the body and the atmospheric pressure. These conditions are frequently observed in women who are about to menstruate at a time when the air is nearly saturated with moisture, also among those who sojourn by the seashore during the summer months, and in connection with ocean voyages. In New York City and probably in any great port of entry, one sees many immigrant women with whom amenorrhœa persists for months after their passage across the Atlantic. It is usually the young and unmarried who are thus affected, and the condition assumes great practical importance from the fact that one is obliged to determine as to the presence or absence of pregnancy.

6. In hot climates women menstruate earlier than in cold. It is not unusual for puberty to be attained between the ages of eight and twelve years in tropical countries, and the well-authenticated stories of precocious maternity which are not uncommon in India, and other countries of that latitude, show the great influence which heat exerts in developing and maturing animal as well as vegetable life. Rouvier, in an excellent statistical paper concerning menstruation among the heterogeneous population of Syria (see *Ann. de Gyn.*, 1887, xxvii. p. 178), states that among 742 cases of women of ten Oriental nationalities seen by him in a professional capacity in the city of Beyruth, the average age at the first menstruation was twelve years and ten months. The youngest menstruated for the first time at the age of nine and the oldest at nineteen. Among the Bedouins he found that menstruation began at the age of eleven. Menstrual life, according to Wiltshire (*op. cit.*), is usually begun in the summer-time, and the same author thinks that the seasonal influence underlies the genesial influence in all creatures, and is a trace of a primordial condition governing reproduction. Heat is also an influence which tends to shorten the menstrual life. It is said that some of the Arab women cease menstruating between the ages of twenty and thirty (see *Real Encyclopædie*, article "Menstruation").

Cold—that is, extreme cold—is an agent which at all times and in all latitudes is unfavorable to the regular and easy performance of the menstrual function. As one travels toward cold climates the establishment of the function seems to be proportionally retarded. In northern European countries it is

not at all uncommon for females to menstruate for the first time at the age of seventeen or eighteen, as the statistics of Leudet's table show. This was published in the *Transactions of the International Medical Congress* held at Paris in 1867 (p. 162) and the following are some of its important statements:

Average age for the establishment of menstruation from a large number of observations in:

	Years.	Months.
Swedish Laponia	18	
Copenhagen	18	9
Norway	16 to 18	
Göttingen	16	
Stockholm	15	6
England	15	6
Bombay	13	
Calcutta	12 4/10	

Heinricius examined the histories of 3500 women of the working class in Finland, and found that in that cold country the average age for the first menstruation was fifteen years, nine months and twenty-five days (*Centr. f. Gyn.*, 1883, vii. 72).

It is thus an unquestionable fact which entirely controverts the opinion of Bennett (*op. cit.*) and others, that the influence of climate upon the menstrual function has not been exaggerated. Hennig is responsible for the statement (see *Centr. f. Gyn.*, 1887, No. 17, p. 274) that the Greenlanders and Laps menstruate only once in three months, and the Eskimos not at all in winter; also, that the women of Terra del Fuego do not menstruate at all or only infrequently during the winter. The effect of cold in suddenly checking the menstrual flow, illustrations of which are common enough among washerwomen and others who intentionally or unintentionally disregard the proper precautions against disturbance of the menstrual flow, is well known; and the subsequent pain and annoyance which frequently result, are equally familiar, and furnish an instructive commentary upon the fact that nature imperiously demands compliance with her laws, ignorance not being a valid excuse for their violation.

Returning again to the classification which was proposed, disorders of menstruation are to be considered as:

1. Amenorrhœa (ἀ not, μῆνος monthly, ῥεῖν to flow).
2. Dysmenorrhœa (δῦς bad or difficult, μῆνος monthly, ῥεῖν to flow).
3. Oligomenorrhœa (ὀλίγον a little, slightly, μὴνος monthly, ῥεῖν to flow).
4. Polymenorrhœa (πολύ much, abundantly, μῆνος monthly, ῥεῖν to flow).
5. Atopomenorrhœa (ἄτοπον out of place, unwonted, μῆνος monthly, ῥεῖν to flow).

I. *Amenorrhœa* means absence or disappearance of the menstrual flow. This condition obtains with those who have passed the menopause, whether in the ordinary course of nature, or as a result of disease or traumatism. In some cases, no valid cause for its existence is discoverable. The term is not strictly applicable to those with whom the menstrual secretion is retained within the pelvic organs on account of obstruction of various kinds. It may be temporary or intermittent, as in the case of those who dwell in a very humid atmosphere, or in very cold climates, in connection with the pregnant state, in wasting diseases, etc.

The question has often been raised, whether amenorrhœa has any significance or influence upon the general health. In my opinion, its influence in this direction may be decided, but I am familiar with cases in which it has existed for periods of five to seven months, in which the cause could not be ascertained, the patients enjoying the best of health during these periods, and showing no substitute for menstruation by abnormal bleedings or other phenomena. Such patients usually consult the physician under the superstition that continued absence of the menstrual flow may be an indication of approaching pulmonary phthisis. One hundred and fifty years ago this question was elaborately discussed by Senfft, in a Latin treatise published at Leipzig. (An fæmina sine catameniorum fluxu perfecta frui possit sanitate, Lipsiæ, 1740.)

Whether menstruation coincides invariably with ovulation is at present immaterial, though we know from the vast experience which has accumulated since the era of abdominal surgery began, that with the removal of the ovaries menstruation ceases in the majority of cases after a short period. It seems evident that the monthly flow is the medium by which the recurring congestion of the pelvic organs is relieved, whether directly associated with the discharge of an ovum or not. If the congestion does not recur, whatever be the cause, amenorrhœa is insignificant; if it does recur, it must follow the law which governs congestion in other parts, and unless relieved by the emission or dispersion of the blood, trouble must invariably result. Such trouble will be indicated by a sense of pain and fulness in the pelvic region; by pain in the loins from involvement of the renal plexus of nerves; and by pain in the head from communication with cerebral nerves and centres. That such communication exists, is demonstrable by the pain in the head, especially in the occipital region, which is frequently elicited by the pressure of the examining finger upon inflamed circumuterine tissues.

Amenorrhœa is not usually annoying to those who suffer from pulmonary phthisis and other wasting diseases. Dalton has reported cases in which it existed in young women for many months before death as the accompaniment of disease of the liver, kidneys, or heart. It is usually troublesome in

young women with whom menstruation is not fully established, and in those cases in which there is mechanical obstruction of any kind to the passage outward of the blood from the vessels. Not infrequently atopomenorrhœa results if mechanical obstacles to the normal outflow are present.

II. *Dysmenorrhœa.* This term, as it is commonly used, is the least exact of any of the terms in the proposed series. It is almost invariably associated in the mind of the physician with pain, and yet, there are doubtless many cases in which there is difficulty in relieving the engorged vessels during menstruation, true dysmenorrhœa, in which there is little, if any, pain. The term includes those cases in which, though there is a flow of blood, the blood is ejected or emitted with difficulty. In its broadest sense, dysmenorrhœa is the condition which is opposed to normal menstruation. and in that sense it includes all the disorders of menstruation. The causes of the difficulty may be mechanical or chemical—that is, the fault may either be in the blood or in its surroundings, and pain is not infrequently a symptom or announcement of the condition. The pain may be referred to the region of the uterus and be of a grinding, bearing-down character; it may be in the loins, in the back of the neck, in the head, etc. There may be a general feeling of discomfort with soreness of the muscles and joints; there may be nausea and vomiting; and there may even be violent mental agitation. The influence of the nervous system in this condition is profound. Phlegmatic women seldom suffer from any of the foregoing symptoms during menstruation, unless there are serious mechanical obstructions to the outflow of the blood. On the other hand, sensitive and hysterical women are almost always dysmenorrhœacs.

We hide our ignorance of the occult anatomical lesions which exist in these cases, by saying that the phenomena are the result of temperament. The truth probably is, that there is no complaint or disorder from which organized beings suffer, whether in great or small degree, which has not its correspondent molecular derangement somewhere, though it may be beyond the power of demonstration by mind and microscope. The mechanical causes of dysmenorrhœa are far more common than the chemical—in fact, it is difficult to conceive of dysmenorrhœa in which the mechanical element plays no part.

In the weak and flabby uteri of young women with poor nutrition and over-stimulated brains we find dysmenorrhœa associated with deficient arterial tension. There is insufficient force to expel the blood through the distended veins and capillaries, or the uterus with its weak and imperfectly nourished muscle contracts too feebly upon the exuded blood to force it out of the uterine cavity. Similar difficulties in the vascular apparatus obtain in the heavy and boggy uteri of subinvolution. In anterior and posterior displacements the blood may be confined in the uterine cavity, and the force of contraction be spent at mechanical disadvantage in removing it. In certain forms of intra-uterine tumors similar accumulations and inefficient contractions may also exist and dysmenorrhœa with its attendant phenomena result. Obstruction may also be caused by hypertrophied mucous membrane constituting the so-called membranous dysmenorrhœa.

Again, dysmenorrhœa may arise in connection with various atmospheric conditions, such as have been enumerated in a preceding paragraph. The chemical condition of the blood may also be such as to prevent free transudation from the vessels during menstruation. Theoretically, an excess of the albuminous or fatty constituents with imperfect assimilation, a superabundance of corpuscles with corresponding deficiency of water and high specific gravity, may all act as sufficient causes of dysmenorrhœa. The same may be said of blood in which large quantities of sugar, pigment, parasites, and other foreign matters are circulating. In all such conditions, we should have a circulating fluid with increased specific gravity, and in so far as menstruation is dependent upon osmosis the fluid would transude with more than ordinary difficulty. I admit that this is entirely theoretical and know of no investigations which have been made upon the subject, but it seems to be in accordance with physical laws. Dysmenorrhœa, therefore, is not a single symptom but a complex of symptoms. It is not a disease as that term is ordinarily understood, though it is a morbid condition.

III. *Oligomenorrhœa.* The condition in which the monthly flow of blood is too scanty to relieve the pelvic congestion is very frequently associated with dysmenorrhœa, and in such cases presents more or fewer of the symptoms which are common to that condition. The term is relative, for the loss of a few drachms of blood in some individuals is all that seems necessary to restore the normal tension to the pelvic vessels. With such persons there may be no symptoms of dysmenorrhœa, and while they may enjoy a fair degree of health they are more frequently women with phthisis or anæmia, or some other constitutional vice.

Oligomenorrhœa sometimes persists during the pregnant state, recurring at that time in the month when the ordinary menstrual flow was wont to appear. It may occur in connection with deformities or want of development of the uterus or ovaries, or during the latter portion of menstrual life, and in such cases may be unaccompanied with dysmenorrhœa. Oligomenorrhœa with dysmenorrhœa is frequently present in cases which offer decided mechanical obstruction to the menstrual flow, as in cases of exaggerated anteflexion, and less frequently in cases of marked

retroflexion. It is frequently present in women who are very fat, whether the latter condition be one which has persisted from childhood, or has occurred, as is frequently the case, as the consequence or result of numerous pregnancies in rapid succession. In the oligomenorrhœa of anæmic women, the blood contains comparatively few corpuscles and is mostly serum. It serves as a fair index of the character of the blood which is circulating in the patient.

IV. *Polymenorrhœa.* This is also a term which must vary in its significance with the individual. I have seen women who bled profusely for days and weeks, some days losing at least a pint of blood, and yet preserving a ruddy complexion and a fair degree of strength. The losses of blood which are frequently sustained in connection with uterine cancer, polypi, and other neoplasms, before the evidences of the drain upon the resources appear upon the skin, or in the waning powers of endurance, are sometimes almost incredible. Polymenorrhœa is also a very common occurrence as the menopause approaches. At such times it is frequently associated with developing malignant disease, and in certain quarters, both lay and professional, the latter is looked upon as a necessary accompaniment of the menopause, hence it is termed "the critical time." It is critical simply in individual cases, not because it is nature's method to terminate the history of a function with a series of bloody inundations; it is no more critical than any other period of menstrual life, unless there is a foundation of disease which can be favored and encouraged by the changes in tissue vitality which characterize the approach of old age.

Again, every gynecologist sees plenty of weak and anæmic women who give no history of losses of large quantities of blood, and yet the loss of a few ounces with each recurring period brings them to the verge of collapse. Such cases require active treatment quite as much as those in which the quantity lost is far greater. The blood-making powers of the latter are far more active than those of the former. It may generally be assumed that a menstrual period which continues longer than a week, has abnormal conditions associated with it, and should be stopped. This is especially true if the flow has been profuse, and though the patient may for a time see nothing in her condition to disturb her, with the exception of the annoyance which attends frequent and protracted bleedings, her vitality will eventually be sapped by the continuance of such a condition, and hence the sooner its cause is discovered and remedied, the better. Those who bleed for long periods of time, at regular menstrual intervals, will sooner or later be bleeding at irregular intervals unless relieved, and it is the part of wisdom and conservatism to investigate in all cases, as soon as possible, after the polymenorrhæa has been established.

One of the most common causes of this condition is carcinoma. For a long time the bleeding may not be due to sloughing and rupture of vessels connected immediately with the disease, but to the increased uterine congestion which attends its development. Other malignant diseases of the uterus produce excessive bleeding in the same manner as carcinoma—that is, by increasing to a very great degree the volume of blood which is directed to the organ; but they are far less common than carcinoma. Benign growths occupying the interior of the uterus, or imbedded in its muscular structure, are almost always a cause of polymenorrhœa, especially if near the trunk or main branches of the uterine artery, and it is perfectly intelligible that this should be the case.

Various diseases of the lining mucous membrane of the uterus, apart from the malignant diseases, are prolific sources of polymenorrhœa. Modern surgical gynecology has done much to relieve such conditions which were once as fatal as cancer, and with the imperfect methods of examination formerly in vogue were probably diagnosticated as cancer.

There are also certain occupations which seem to favor excessive bleeding at the menstrual period, and we may be unable to find any evidence of disease in the uterus or its surroundings in those who are thus suffering. Occupations in which the individual is constantly exposed to a very high temperature have this tendency, and I have seen a number of cases among cooks and laundresses. Among prostitutes and others who have greatly abused the sexual act, polymenorrhœa is also of frequent occurrence.

When we think of the great progress which has been made in recent years in the diagnosis of so many conditions which have excessive uterine hemorrhage as the chief symptom, and the means which have been devised for their effectual relief, there is cause for profound gratitude.

V. *Atopomenorrhœa.* This term includes every variety of monthly flow, or substitute for the monthly flow by any other channel than the one which nature designed for that purpose. The term *vicarious* menstruation is a very awkward one, and properly means the menstruation which one person suffers or experiences for another. This is, of course, an absurdity, and only by twisting the term from its proper significance can it be understood as referring to menstruation which occurs through abnormal channels. The term xenomenia, which was proposed by Flamant, in 1720, is a good one, and is etymologically correct, but for the purpose of uniformity perhaps the more clumsy term which I have suggested would be preferable.

A common form of atopomenorrhœa is the bleeding from the nose which occurs with young girls during the first few months of puberty. It usually

requires no treatment, and may be considered as a means of relief to a congestion which is displaced. Bleeding from the anus, especially in those who suffer from hemorrhoids, is another form of this condition, which is perfectly intelligible, and may usually be relieved by the destruction of the enlarged veins. Other abnormal bleedings which may occur with the normal menstrual flow or in the absence of it, are bleedings from the lungs or stomach; bleedings into or through the skin or mucous membrane in the form of purpura and various extravasations and transudations; bleeding in connection with acne, nævi, ulcers, and fistula; bleedings from the gums, the nipple, the anterior chamber of the eye, the external auditory meatus, and other places.

The foregoing facts seem to prove that the monthly congestion in women, whatever be its cause, is not local, but general; or, at any rate, that the vascular tension at such times is raised, so that veins and capillaries which are near the surface are much more liable to rupture than under the ordinary conditions of tension and pressure.

159 EAST THIRTY-SEVENTH STREET.

IDIOPATHIC ACUTE PAROTITIS; SLOUGHING OF THE ENTIRE GLAND; RECOVERY.

BY RICHARD H. DAY, M.D.,

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THERE is but little said in our standard authors, or in the current periodical medical literature of the day, on parotitis; and what little is said, applies more especially to its occurrence in its specific character, under its common form of mumps.

Bryant, in his *System of Surgery*, treats of it simply in its specific form, but says, "when it follows upon a fever, it is a severe affection, and not unfrequently passes on to suppuration; such abscesses spread easily, the deep fascia covering them in, forbidding a natural outlet except by burrowing."

Wythe in his recent text-book on surgery, in a few lines only, writes of it as parotitis, or mumps, but adds: "abscess may occur after an acute inflammation of the parotid from traumatism, or as a complication of the eruptive or continued fevers. Under these last conditions, the prognosis is always grave."

Gross, in his comprehensive work on surgery, is much more full and clear, and I must be allowed to make a rather lengthy abstract, from the work of this great author, since it conveys more information upon this grave form of parotitis, than is to be derived from any other source. He says:

"Abscess of the parotid is nearly always of an acute character; being usually a result of simple inflammation, local injury, erysipelas, typhoid fever, smallpox and other eruptive diseases. Sometimes the swelling is remarkably diffused. The fluctuation is generally very obscure on account of the manner in which the contents of the abscess are bound down by the cervical fascia and the capsule of the gland. Owing to this circumstance, the true nature of the disease is apt to be overlooked, and the pus allowed to burrow about in different directions; thus producing the most serious mischief, opening, perhaps, after having induced the most violent suffering, into the auditory tube, or extending down the neck along the great vessels, and causing extensive havoc in the connecting cellular tissue. In some instances the fluid passes round the trachea, and finally destroys life by bursting into the chest.

"*Gangrene.*—Mortification of this gland occurs chiefly in erysipelas, typhoid fever, scarlatina and smallpox. Fortunately, however, it is very rare in any form of the disease. The sloughing is usually most extensive in the connecting cellular tissue, but occasionally it affects the glandular substance also, which it may completely destroy, as I have had occasion to observe in several cases. In one of these not a vestige of the organ was left, its former site presenting a deep hollow extending down to the ramus of the jaw and the auditory tube."

It is thus seen that however simple and unimportant specific parotitis may be, and is, as it is usually observed; when it occurs as the sequel of the eruptive or continued fevers, or of pyæmia, as in the case of the lamented Garfield, it may become a disease of the gravest character, and develop the most serious consequences.

The case that I have now to report differs in its etiology from any of the cases spoken of by these authors in that it was not a sequence of any eruptive or continued fever, nor the result of pyæmic poison, neither was it specific in character; but, as will be seen, was an acute idiopathic inflammation of the parotid gland; autogenetic in origin and resulting in the complete and entire sloughing of the gland. As such, I report it as a complement to the meagre and incomplete history and literature of acute parotitis.

The subject in whom it occurred was K. P., a mulattress, aged about thirty-two years, a native of Baton Rouge, La. She is the mother of two children; the elder if living, would now be about sixteen years old, having died in 1878, when five years of age—cause of death continued fever, resulting in inflammation and ulceration of the right side of the face, and terminating in gangrene of the soft parts and necrosis of the maxillary bones. The younger child is now seven or eight years old, and appears to be in the enjoyment of good health. I have known this woman, since her childhood. She is tall and spare, and has always been delicate. She is thin in chest, and is of a strumous or scrofulous diathesis.

On this occasion I was called to see her on August 23, 1888, and finding her under the treatment of another physician, I withdrew, making no examination into her condition.

On the 25th I got a note from her doctor request-

ing me to see the case with him. I found the left parotid very much swollen, very hard, and exquisitely painful; and the whole integuments on the left side from the chin, back to the mastoid and down to the clavicle, diffusely inflamed, and so extremely sensitive that the softest touch produced the most excruciating pain. The pulse was small, frequent, and feeble, and accompanied with great systemic prostration. I advised the application of a hot flaxseed poultice over the gland and inflamed integuments; chloral and morphine to ease pain and procure sleep; a liquid nutritious diet, and enemata as might be required to move the bowels, and five grains of quinine to be given three times a day.

On the 13th of September I was again sent for, and requested to take charge of the case, the attending physician consenting and relinquishing all further control. I found the patient much exhausted and reduced in flesh from constant excruciating pain and inability and disinclination to take food. The gland and integuments were still inflamed and more distended and painful, with obscure fluctuation at two points (*a*) at the upper edge of the gland and (*b*) below the angle of the jaw. The doctor preceding me had supposed the case to be abscess in the mastoid cells, and had made a free cut down upon that process, but without finding any pus. I made a free incision at the two points designated; from the upper one, I suppose about a tablespoonful of ill-looking thin pus escaped; from the lower opening, only a little thin sanious fluid exuded.

These incisions into the parotid revealed the fact that the entire gland was in a sloughing process, that it was necrosed, and undergoing disorganization. I could with gentle force pass a silver probe in different directions through the gland, causing not as much pain as was induced by touching the investing integuments.

My course was a plain one. Support the patient's strength, quiet pain, disinfect, and promote as fast as possible the sloughing and separation of the necrosed gland. To accomplish the first indication, I insisted upon the regular and frequent administration of cow's milk, beef broth, Ducro's elixir and port wine, and small doses of quinine three times daily; for the second, fifteen grains choral with one-quarter grain morphine were given as needed, both to ease pain and to procure sleep at night; and for the third indication, I used a flaxseed and charcoal poultice applied warm and made fresh three times a day, and injected into the upper opening a weak solution of carbolized oil at each dressing.

I was assisted by a good nurse, who carried out my instructions faithfully; and every alternate day I made a visit and removed with forceps and scissors such portions of the gland as I could draw through the opening, and that were manifestly dead.

On the 20th of September I lifted out through the upper opening the entire remnant of the gland in a coherent mass, which had been completely detached by the *vis medicatrix naturæ*, leaving a deep sulcus, or hollow, extending down to the underlying bloodvessels. This cavity I had syringed out daily with a weak solution of carbolized oil, and applied over the integuments a thick pad of carbolized absorbent cotton and oakum, so as to press the surfaces together, to exclude the ingress of air and facilitate granulation. The dietetic treatment was continued, and the chloral and morphine were dispensed with. In addition, I now put my patient upon cod-liver oil, which I found of great benefit. The cavity gradually closed and healed over, the patient in the meantime improving in flesh and strength, and finally was restored to her customary health; leaving however, a deep and marked depression in the site of the missing parotid.

I look upon this case as not without interest to the medical profession: 1st. In its unmistakable autogenetic origin; 2d. In the entire and complete sloughing away of the gland by a gangrenous process, a very rare occurrence; and 3d. In the final good result of the case, and the restoration of the patient to her former, if not even better, health.

MEDICAL PROGRESS.

The Treatment of Diphtheria with a Spray of Hydronaphthol, Papain, and Hydrochloric Acid.—DR. W. C. CALDWELL, of Chicago, assumes:

1. That diphtheria, at first like wound and puerperal sepsis, is a local disease, and that the temperature is due to the absorption of leucomaines. It is probable that later the microbe of septicæmia, and possibly the microbe of diphtheria, may enter the blood and produce a general disease, the temperature being due in part to the leucomaines produced by the microbes which are multiplying in the blood and lymph

2. It is probable that the pseudo-membrane is over the site of local primary infection, and that in it and specially beneath it in the lymph spaces of the submucous tissue are the invading bacteria of diphtheria.

Hence, if diphtheria is at first a local disease, and later may become a general disease, either a septicæmia or diphtheræmia; and if this local infection is accompanied by a pseudo-membrane which covers over the invading bacteria, the indications for treatment are the prompt, frequent, and effective application of remedial agents which will—

First. Remove the pseudo-membrane, so that the bacteria can be reached; and,

Second. Arrest the growth of the bacteria.

For convenience, the author prescribes these drugs in the same mixture; but it should be remembered that they must not neutralize each other's actions, or in any way be incompatible. An antiseptic and peptonizing agent might act powerfully when used separately, but might be inactive when in the same mixture. Pancreatin is an active peptonizer, but it can only be used with an antiseptic which can act in an alkaline menstruum; hence, it cannot be used with bichloride of mercury. Dr. Caldwell has not tried pepsin in combination with an antiseptic. Papaïn acts in an acid, neutral, or alkaline menstrua, and hence it is more available for combination. Bichloride of mercury is a powerful antiseptic in neutral and acid menstrua, but it not only arrests the growth of the bacteria, but also, to a certain extent, the peptonizing ferment. At least it has this effect in artificial digestion; however, the author used it with papaïn

in one case of diphtheria for twenty-four hours. The pseudo-membrane was readily dissolved, and the temperature fell from 103° to 99° from 9 A.M. to 6 P.M. But there is another and far more serious objection to bichloride of mercury, and that is the danger of mercurial poisoning.

Hydronaphthol is also a powerful antiseptic which acts in either a neutral or acid menstrua, and, besides, is not poisonous. No experiments on artificial digestion in the presence of hydronaphthol were made; however, when used with papaïn to spray the throat in diphtheria the membrane rapidly dissolved.

The treatment of the seven cases consisted of—

1. Keeping the bowels open.

2. Ingestion of two to six ounces of milk every two hours. The papaïn probably greatly aids the digestion of the milk, for most of it is swallowed.

3. Spraying the throat every half hour till the temperature is reduced and breathing is easy; then every hour, unless asleep. In these cases, when the spray was used thoroughly, the temperature fell in from four to eight hours. It is probable that the temperature was due to leucomaines only, and that had the treatment been delayed till there was general infection the spraying would would have had much less effect on it.

The following is the prescription for the spray used in these seven cases:

℞.—Papaïn	. . . . .	ʒij.
Hydronaphthol	. . . .	gr. iij.
Acidi hydrochlorici dil.	. . .	gtt. xv.
Aq. destil.	. . . .	ad. ℥iv.—M.

It is no easy matter to apply the spray properly—that is, to the site of infection. It requires three persons to spray the throat effectively, especially when the larynx is involved. One person firmly holds the child in a semiprone position; another depresses the posterior portion of the tongue, rendering accessible the structures involved, both by lowering the tongue and raising the larynx; and the third uses the hand-atomizer rapidly for a few seconds. The child is then given a little rest, and this procedure is repeated several times.—*Archives of Pediatrics*, February, 1889.

Glycerine Suppositories.—DR. SCHAFFER substitutes for glycerine-injections glycerine suppositories made from the ordinary glycerine soap. This soap contains from 20 to 35 per cent. of glycerine, and the suppositories made therefrom have, according to his experience, answered all requirements.—*Münchener med. Wochenschrift*, January 15, 1889.

Liniment for Nephritic Colic.—

℞.—Chloroform	. . . .	15 parts.
Extract of hyoscyamus	. .	15 "
Laudanum (Sydenham)	.	5 "
Oil of chamomile	. . .	150 " —M.

Rub well over the seat of pain.—*L'Union Médicale*, January 24, 1889.

Suppurating Hydatid of the Abdomen Treated during Pregnancy.—In the *Australian Med. Journal* of last month, Mr. Girdlestone records an interesting case of hydatid cyst of the abdomen which required treatment during pregnancy. The patient, aged thirty, had noticed swelling of the abdomen nine months previously, or two months after the birth of her last child. This swelling had been tapped four times. The diagnosis of hydatid was confirmed by the character of the fluid withdrawn; but on admission her temperature and symptoms pointed to suppuration of the cyst. A rounded tumor could be felt in the abdomen projecting against the anterior wall, its upper limit reaching above the umbilicus; it was slightly movable. Mr. Girdlestone passed three long steel acupressure pins, and inserted each of them deeply through the abdominal wall, then through the front of the cyst, bringing the points out through the skin on the opposite side of the tumor; the pins were parallel to each other and three-quarters of an inch apart. Some silk ligature was then twisted round them in the form of the figure 8 over the skin, so as to retain the cyst in contact with the peritoneal lining of the abdomen with a moderate amount of pressure. On the following day the silk ligature was divided, the centre pin withdrawn, and the cyst opened by an incision which extended between the remaining pins. The wall of the cyst was then attached to the skin by four interrupted wire sutures, and the contents evacuated. A large drainage tube was inserted, and retained by fastening it to the wire sutures; the remaining pins were now removed. The cyst was washed out with perchloride solution and dressed antiseptically with iodoform. Recovery was uninterrupted; the wire sutures were removed at the end of a week, and the cavity gradually closed. The operator was led to employ the long pins in order to procure more certain adhesion of the cyst to the abdominal wall, having had a case of somewhat similar kind in which, from some unexplained cause, the cyst became detached at the end of three weeks and the patient died of peritonitis. Another advantage claimed is the possibility of using the scalpel instead of the trocar, thus giving free exit to the contents of the cyst.—*Lancet*, Jan. 26, 1889.

Milk in Infant Feeding.—DR. T. M. ROTCH states (*Boston Med. and Surg. Journ.*, Feb. 7, 1889) that his own belief has long been, that practically for the successful feeding of the young infant with cow's milk (so far as the coagulum is concerned) it is quite as, if not more, important to consider that the total amount of these nitrogenous matters being two to four times as great in cow's milk as in human milk, it is more practical to dilute these matters in cow's milk until the dilution corresponds to that found in human milk, and that then the coagulum will be found to correspond very closely to that of human milk, and will not require to be broken up. An instance which seems to show that this reasoning is practical has recently came to his notice. It is often stated that the curd of human milk is small, soft, and easily broken up, while that of cow's milk is large, tough, and tenacious, so that we should add something to the latter to make the curd fine and friable. These characteristics of the two curds I have found to be present where the milk is in a comparatively normal condition as to the percentage of its albuminoids.

When, however, the percentage of albuminoids in human milk reaches that which exists in cow's milk, we find a curd with the characteristics of cow's rather than human milk, as he found exemplified in the following instance referred to above. An infant seven days old,

and unusually vigorous and well developed, was provided with the milk of a healthy wet-nurse, who had been accustomed to plain but good food. An analysis of the milk made just before it was given to the infant showed the albuminoid percentage to be 2.53 and the water 89.78. The milk was digested perfectly, and the infant throve for the following three weeks. During these weeks, however, the diet of the nurse was changed from the plain food to which she was accustomed, to a much greater variety and amount, and to very rich milk, her usual exercise also being lessened. The infant then began to vomit thick curds identical in appearance and toughness with the curds of cow's milk. An analysis of the milk was then again made, and the albuminoids found to show the high percenage of 4.61 and the water to be 83.50. The nurse was then fed on plainer food and skimmed milk, and the infant soon ceased to vomit. A third analysis of the milk now showed the albuminoids to be decreased again to 2.9.

Dr. Rotch concludes that until something more definite is known concerning this rather theoretical method of treating the albuminoids of milk, that dilution with plain water is the most practical and efficient means at our command.

Menstruation a Contraindication for the Administration of Antipyrin.—DR. H. HUCHARD reports in the *Revue Générale de Clinique et de Thérapeutique*, Jan. 24, 1889. the following case: A few months ago he administered to a woman suffering from severe dysmenorrhœa fifteen grains of antipyrin. After a short time the menstrual flow ceased, the patient being taken with a severe chill, with chattering of her teeth, and the extremities and face becoming cold and cyanotic with repeated fainting fits and syncope. Soon the face became red and flushed the pulse small and soft, the patient complained of severe headache. She recovered. The author observed several other cases with less severe symptoms and has since then not administered antipyrin during the first two or three days of the catamenial epoch.

Perforation of the Vermiform Appendix; Laparotomy; Recovery.—DR. ARTHUR M. JACOBUS reports a case of this and concludes his study of the subject with the following summary:

1st. That typhlitic diseases are intra-peritoneal; that in nearly every instance they originate in inflammation or perforation of the appendix or cæcum, usually caused by fecal impaction or foreign bodies; that even though these diseases frequently do not primarily end in suppuration, still their tendency is to recur and eventually end fatally by septicæmia, or shock from ruptured abscess, or purulent peritonitis.

2d. That, in view of the foregoing, all diseases of this region giving symptoms of inflammation or peritonitis, without regard to the question of pus or abscess, and which do not yield promptly to the modern medicinal treatment and are progressive, should be treated by laparotomy at the earliest period possible.

3d. That when peritoneal or intestinal adhesions or pus-sacs exist, they should always be broken up, the abdominal cavity thoroughly douched with sterilized plain water, at a temperature of 105° F., the wounds sutured, and the cavity drained by glass tubes.

4th. That, excepting in undoubted cases of simple post-cæcal abscess unaccompanied by peritonitis, the incision should be made either vertically over the caput colli (after Sands), or, in the linea alba, below the umbilicus, and preferably the latter operation when extensive peritonitis or adhesions are suspected.

5th. That, whether in operative cases or not, opiates should be used as little as possible; but, on the other hand, saline or vegetable cathartics (followed by enemata) should be used from time to time, to relieve the inflammation, tympanites, pain, and fever, and particularly to drain the peritoneal cavity of serous or purulent effusion.—*Medical Record*, February 2, 1889.

Treatment of Nasal Affections.—DR. COZZOLINO, of Naples, recommends for the various affections of the nasal passages the following compounds:

For scrofulous rhinitis:

℞.—Sulpho-carbolate of zinc . . grs. v.
Salicylate of bismuth . . grs. lx.
Iodol . . . . . grs. vl.
Tannate of zinc . . . . grs. xxx.
Powdered talc . . . . grs. cl.—M.
Use as a snuff.

Chronic catarrhal rhinitis.

℞.—Powdered alum, Borax } . . . 30 grs.
Menthol . . . . . 3 "
Tannate of zinc, Tannate of bismuth } . . . 45 "
Lycopodium . . . . ʒij.—M.

or

℞.—Salicylate of zinc, Tannate of bismuth } . . āā ʒj
Powdered borax . . . . 30 grs.
Salol . . . . . 23 "
Powdered talc . . . . ʒij.—M.

Simple acute catarrhal rhinitis.

℞.—Chloride of ammonium . . grs. 45.
Salicylate of sodium . . . grs. 30.
Chloride of potassium . . grs. 45.—M.
To be used as a snuff.

Hyperæmic swelling of the nasal mucous membrane.
A frequent cause of reflex disturbances.

℞.—Glycerin, Water } . . . . āā ʒiv.
Alcohol (rectified) . . . ʒiss.
Menthol, Cocaine } . . . . āā grs. 3.—M.
Use three to four times daily.

Very acute coryza.

℞.—Water, Alcohol (rectified) } . . ʒiv.
Carbolic acid . . . . ʒss.
Menthol . . . . . grs. iv.
Salammoniac . . . grs. 23 to 30.—M.
Inhale.

Powders are best adapted to treating the nasal passages, as they remain longest in contact with the mucous membrane.

For epistaxis, the best new surgical remedy is the hot douche of 122° to 140° F.—*Bull. Médical*, and *Deutsche med. Wochenschrift*, Jan. 24, 1889.

Myrtol as a Disinfectant of the Respiratory Passages.—DR. EICHHORST, (*Ther. Monatshefte*, January, 1889) recommends myrtol as a disinfectant of the respiratory passages.

Myrtol is a clear fluid, has a refreshing odor, and is that portion of the myrtol oil which melts at 158° to 170° Fah.

It is best administered in capsules containing 2½ grains each, of which from two to three are taken daily. One hour after its administration its odor is perceptible in the patient's breath. The curative effect is said to be rapid, especially in putrid bronchitis and pulmonary gangrene. Myrtol exerts no action over the tubercle bacillus. The intestines of patients who have died while taking this remedy retain the order of myrtol for some time.—*Wiener klin. Wochenschrift*, January 17, 1889.

Mechanical Treatment of Tabes Dorsalis.—A singular method of treating cases of locomotor ataxy has, during the past three months, been tried at the Salpétrière, and the results have been so satisfactory that M. CHARCOT recently devoted one of his lectures (*Progrès Médical*, Jan. 19th) to the subject, demonstrating the cases so dealt with. The practice is not absolutely novel, since in 1883 it was brought forward by Motchoukowsky of Odessa, who claimed that twelve tabetics had been greatly benefited by it, and also that the plan was of use in cases of sexual impotency apart from tabes. Last year M. Raymond, when on a visit to Russia, heard of the practice, and introduced it to M. Charcot's notice, and, as above said, it has been adopted in M. Charcot's wards during the past three months, the "chef de clinique," M. Gilles de la Tourette, superintending it. It simply consists in suspending the patient by means of Sayre's "jury-mast" for a period beginning with a duration of half a minute and progressively increasing up to three or at the most four minutes, an interval of two days occurring between each suspension. In order to exert greater traction on the spinal column, it is well to raise the arms every fifteen or twenty seconds. Eighteen tabetics have thus been treated, embracing about 400 "suspensions." Excluding four who were not suspended more than three times, the improvement was marked in fourteen, and eight of these most remarkably. They were all confirmed cases, and had mostly been treated by cauterization along the spine. Almost from the commencement of the suspension treatment the patients would improve in walking—an improvement at first temporary, but after eight or ten suspensions becoming continuous. They could then stand more easily, and walk without assistance. After twenty or thirty suspensions Romberg's symptom disappeared. There was also relief from vesical troubles, when these existed; diminution and even disappearance of lightning pains; return of sexual desire and capacity. Anæsthetic and other sensory disturbances also disappeared, and the general condition of the patient improved, sleep being better, etc. One case had a return of lightning pains whilst being treated, but subsequently again underwent improvement, which in all the rest was uninterrupted. In no case did the knee-jerk return, or the pupil reaction become normal. The method has also been applied to a few non-tabetic cases, as Friedreich's disease, neurasthenia, and disseminated sclerosis; but, as M. Charcot observes, the method is still in the experimental stage. So far, the results in tabes are encouraging, whilst the simplicity and harmlessness of the method are additional recommendations for its further trial.—*Lancet*, January 26, 1889.

Chloride of Iron in Diphtheria.—DR. KNITSCHOFSKY advocates the administration of chloride of iron in diphtheria. He prescribes for it as follows:

℞.—Tincture of chloride of iron . . 8 parts.
Glycerine . . . . . 15 "
Water . . . . . 180 " —M.

For children, one teaspoonful every two hours; for adults, from a teaspoonful to a dessertspoonful every two hours or oftener. Dr. Knitschofsky has frequently tried this remedy, and has come to the conclusion that as much as one teaspoonful can be administered every half hour without danger.—*Wiener klin. Wochenschrift*, January 17, 1889.

Treatment of Typhoid Fever in Children.—DR. H. GILLET recommends the following: To reduce the temperature wrap the little patient in blankets saturated with the following:

℞.—Vinegar . . . . . ℥viij.
Carbolic acid . . . . . 15 grs.
Oil of thyme . . . . . 5 drops.—M.

Of the antipyretics quinine is the best (four grains for a child from one to two years of age); still salicylic acid in the same doses is often of service:

℞.—Salicylic acid . . . . . 4 to 6 grs.
Brandy . . . . . ℥iss.
Syrup of orange-flowers . . ℥iss.
Lettuce water (Fr. Ph.) . . ℥ij ℥ij.—M.

If sore throat supervenes, it should be treated with gargles of glycerine and borax. Stomatitis, if present, requires local applications of chlorate of potassium.

To overcome constipation injections of glycerine, or the administration of manna or of castor-oil, are of service, or the following can be tried:

℞.—Scammonium, Calomel } . . . . ää ¼ grain.
White honey . . . . . ℥iv.—M.

For a child one year old divide this into three portions and administer at intervals of ten minutes.

If there is diarrhœa, wash out and render the intestinal canal aseptic with the following:

℞.—Boracic acid . . . . . 3 parts.
Boiled water . . . . . 100 "

Never use phenic acid, as it is dangerous. To overcome the diarrhœa proper inject:

℞.—Infusion of camomille . . ℥iss.
Starch . . . . . ℥j.
Laudanum (Sydenham)
one year old child . . ½ drop.
two to three years old . . 2 drops.—M.

Should there be any cerebral excitement present, administer musk, camphor, bromide of sodium or chloral in orange-flower or cherry-laurel water. An infusion of roasted coffee is at times serviceable and well liked by children.—*Revue Gén. de Clinique et de Thérapeutique*, January 16, 1889.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

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SATURDAY, FEBRUARY 23, 1889.

MASSAGE IN THE TREATMENT OF EYE DISEASES.

IN an address upon this subject, made at the recent Cologne meeting of the German Naturalists and Physicians, DR. PFALZ, of Düsseldorf, calls renewed attention to the matter, and chides the silence of others. While Pagenstecher's recommendation of this means of treating various affections of the anterior segment of the eyeball, and especially of clearing up corneal opacities, has doubtless been widely adopted; and the ointment of the yellow oxide of mercury, commonly used as an adjuvant, is often called by his name; it is yet a fact that not much has been written upon the subject. Many text-books make little or no mention of massage, and the matter probably lacks deserved attention.

For the clearing away of opacities in the cornea, numerous medicaments in the form of solutions, powders, or ointments, had long been employed, and among them the amorphous precipitates of mercury; but it seems to have been by Pagenstecher first that the *rubbing* was emphasized as an important element in the use of stimulating ointments; and others have proven its efficacy by omitting not only the medicament, but also the lubricant which he directed. Pagenstecher first commended its use for episcleritis and pannus; later for most slow and chronic affections of the anterior segment of the eye, except when iritis was present—involvement of the iris constituting a distinct counter-indication to its employment. This view is so far modified by Pfalz as to include chronic *plastic* iritis and its results among the conditions in which massage may be employed, after the more acute stage is past, with safety and sometimes with marked benefit. Serous iritis seems always very intolerant of such treatment, and little benefited by it, when borne. The value of the measure in lid-affections has been less noted; and while claiming for it but a limited range of application, Pfalz urges its usefulness in blepharitis, follicular conjunctivitis, and other chronic inflammations of the lids and conjunctiva, basing his views upon the anatomical disposition of the blood and lymph vessels, as well as upon clinical observation.

Theoretically, massage empties the vessels, and their refilling takes place not only from the capillaries, but also by imbibition from the tissues; while increased tone of their walls lessens the tendency to subsequent dilatation. Exudations are diffused over a wider area, and their absorption thus facilitated; while the circulation is quickened, and perhaps the trophic nerves stimulated, by the gentle irritation. Of course, only certain tissues are open to such direct action of the massage; yet it is claimed that the effect extends much further, and that notable reduction of the intra-ocular tension may be secured by this measure alone. Whether the vessels of the iris can be emptied by massage, as Pfalz claims, is probably like several of the points discussed, not beyond question; such, at least, is the explanation which he urges for the widening of the pupil which he observes as a result of the manœuvre.

Several cases are upon record where a sudden obscuring of vision has disappeared after rubbing the eyes; and the nature of the case and the subsequent history made it very probable that stasis in the retinal vessels, due to embolism or thrombosis, had been present and yielded to the massage. An unmistakable case of thrombosis of a retinal artery so relieved, has just been reported by Hirschberg.

Massage has also been utilized, after Förster's method, to triturate the lens-substance of slow-ripening cataracts, in order to hasten the maturation, and also to promote the absorption of a soft cataract after discission. Probably under the same title can be included the measure advocated by Michel—passive motion of a paralyzed or paretic muscle by grasping the tendon with fixation forceps and exercising the defective muscle by gentle stretching, alternated with stretching of its antagonist. Each of these procedures has met with more or less of success when conscientiously carried

out in suitable cases; and the negative or unfavorable results sometimes reported may often be ascribed to the operator rather than to the measures themselves.

The great drawback to the wider utilization in many cases, is the time that it takes. While a couple of minutes is all that is usually wise to expend upon any one region, this is too often more than the surgeon is willing to give. He therefore relegates the matter to some attendant, with the result that the method if properly applied at all, is not judiciously directed, as it must needs be in order to obtain the best results. These are potent and by no means harmless procedures, and their abuse may more than undo any good effects.

In its ordinary application to affections of the anterior segment of the globe, the lids should be gently closed and drawn a little tense by the fingers of the operator, and then *lightly* stroked by quick passes of the thumb, the index finger, or a cotton pledget. For the cornea, radiate stroking of one sector at a time is the best, carried, of course, from centre to periphery; circumcorneal lesions may be rubbed by a circular motion. In the case of the lids, the movement should be from internal to external canthus along the upper or the lower margin of the tarsus, and may be continued out and down upon the cheek along the course of the vessels. So employed at intervals of from one to three days, massage acts as a decided stimulant, reddening the eye for a short time, but generally soon reducing any congestion present. Any desired medicament may be rubbed in by the manipulation, the yellow oxide ointment being a favorite. (A salve so used must be free from all gritty particles, a condition most easily obtained in that of the yellow precipitate by adding an equal proportion of oleic-acid and rubbing it up with vaseline; the resulting orange-colored ointment in a few days becomes pale yellow and transparent from solution of the mercurial salt). Where the palpebral conjunctiva is the affected tissue, the everted surface of the lid may be rubbed.

As an explanation of some of the effects of massage upon corneal opacities, Pfalz points to the findings of the corneal microscope, which demonstrates in many cases tracts of vascularization, generally superficial, which are very prone to congestion upon slight cause. These he has rarely been able wholly to get rid of; but improved tone has lessened their irritability and their size has been reduced, so that they and the surrounding infiltration have ceased to be so great an obstacle to distinct vision. Old cicatrices may grow little if at all thinner; yet the smoothing of their superficial roughness may lead to a marked improvement in the visual sharpness. One case which Pfalz cites seems an extreme one, where in an interstitial keratitis with involvement of the iris, which had proved very rebellious, the vision was raised in four days from counting fingers at three feet to $\frac{4}{24}$, and in twelve sittings to $\frac{8}{9}$.

The applications of massage are thus claimed to be more extensive than generally thought; and the paper of Dr. Pfalz, while decidedly enthusiastic, seems to merit careful consideration. American ophthalmic surgeons have long made some use of massage, but certainly few can claim to have given it such a test as here described: and while the results have not generally been so brilliant, and have often been ascribed to the medicament employed rather than to the manipulation, it seems well to invite renewed attention to the subject, in the hope that more extended and careful tests will confirm the claims that are urged by its advocates.

STROPHANTHUS.

WITHIN the last few weeks, discussions of considerable interest to every one have taken place in the medical societies of the European continent, as to the relative value of strophanthus and kindred drugs. In the *Gazette Hebdomadaire* of January 18, 1889, and in *L'Union Médicale* of January 17, 1889, is a brief account of the transactions of the Académie de Médecine on January 15th, in which DUJARDIN-BEAUMETZ expressed the thought that, in his opinion, strophanthus is to be regarded as a tonic of great value in cardiac enfeeblement, possessing no deleterious renal effects, unless acute nephritis exists, when, by reason of its stimulation of the renal epithelium, it may do harm. In renal incompetence it is superior to digitalis. One of its disadvantages, he asserts, is the production of diarrhœa by its prolonged use. The assertion of Cazeaux, that it might produce nephritis, he regarded as exceedingly doubtful, except in exceedingly rare cases, and he found that it acted very happily as a diuretic when such action was desired, and with marked rapidity in the dose of five or six drops of the tincture morning and night. Altogether, Dujardin-Beaumetz regards strophanthus as a singularly valuable addition to materia medica.

At a later meeting of the Académie de Médecine, GERMAIN-SÉE read a paper on the same subject. He asserted that the action of the alkaloid was incontestably superior to that of the crude drug, in exactly the same manner as morphine and atropine are better than opium and belladonna. In mitral and aortic insufficiency it seemed to be particularly useful.

Apropos of these remarks, Sée attempts to establish a series of cardiac remedies in classes according to the state against which they are directed. These are those which are respiratory in action, or especially directed against dyspnœic symptoms, and consist of iodide of potash, atropine, pyridine, and erythrophleine, and those which are tonics to the heart, as sparteine, strophanthine, digitalis, convallaria; thirdly, those of diuretic power, namely, caffeine, and similar drugs.

Both Dujardin-Beaumetz and Constantin Paul discussed the paper at the meeting, the latter recommending an extract of strophanthus.

Again, in *Nouveaux Remèdes* of January 24, 1889, BUCQUOY contributes an article on strophanthus, in which the value of the drug in aortic disease is particularly noted; the benefit in cases of angina pectoris and the non-cumulative tendencies of the drug are all insisted upon. Still more recently, in the *University Medical Magazine* for March, Hare has recorded its value in the cardiac diseases of young children where digitalis fails.

THE annual report of Dr. Wm. K. Newton, Dairy Commissioner of the State of New Jersey, recently presented to the legislature, shows very favorable results from the enforcement of the law regulating traffic in milk and oleomargarine. That part of the report relating to the adulteration of foods and drugs furnishes information which will not be relished by the citizens of New Jersey. Of the 623 articles of food subjected to analysis, more than 48 per cent. were found to be adulterated; and of the 415 samples of drugs and medicines analyzed, more than 55 per cent. were adulterated, or below the legal standards.

Adulterations were detected in lard, coffee, canned goods, honey, ground spices, cream of tartar, olive oil, and numerous drugs and medicines. Some of the adulterants were of such a nature as to be injurious to health, others, and the most of them, were harmless. The selling of a debased article, though harmless, is an imposition, which in the case of medicines may place life in jeopardy. The Commissioner deserves great credit for the active warfare waged by him and his associates against these nefarious practices.

IT is stated that Dr. Gamaleia, of Odessa, who claims to have discovered a method of vaccination against cholera, will go to India next month to pursue his investigations.

A HOSPITAL located within the walls at Jerusalem has unsanitary conditions of so grave a nature as almost to challenge its usefulness. It is described as having no drainage, and in a crowded situation where the streets are narrow, and into which refuse of every description is thrown, the effluvia from which is indescribable. In the courtyard of the hospital is an opening or vent from an extensive old cesspool partially underlying the building, and from it a stream of foul air is constantly pouring through the wards, which are damp, unventilated, and without the means for heating. It would be a charity to abandon such a charitable institution as this, if this is a true description.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON NEUROLOGY.

Stated Meeting, February 8, 1889.

LANDON CARTER GRAY, M.D., CHAIRMAN.

DR. J. ARTHUR BOOTH reported

A CASE OF TUMOR OF THE CEREBELLUM.

The patient was a girl, ten years of age, who was seen in consultation February 19, 1888. The family history was good, and the child had previously had no serious illness. When three years old she fell down a flight of steps, striking her head upon the stone walk. In November, 1887, it was noticed that she was losing flesh, and she began to have attacks of headache and vomiting. She became very irritable, and indisposed to exertion, and it was noticed that she carried her head as though her neck was somewhat stiff. From the middle of January she complained of pain in the back part of the head and the neck, principally on first awakening in the morning.

On examination, February 19th, she was found to be dull, listless, and very weak. Complained of severe head pain. Speech normal; no deviation of tongue. Vision was apparently normal, and there were no changes in the fundus; but the pupils were dilated, and there was no reaction to light. There was slight paresis of the right external rectus, but no paresis of face or limbs. Knee-jerks absent; no anæsthesia. There was marked sensitiveness to touch all over the head, and especially on the

back of the neck just below the occiput. Posterior cervical glands quite large. The temperature was 101⅘° and the pulse irregular, and the diagnosis made was tubercular meningitis. Tumor of the cerebellum was considered, but the absence of optic nerve changes, and the presence of an elevated temperature, with irregular pulse, seemed to indicate the condition named.

Increasing doses of iodide of potassium were ordered, and on February 24th the patient's general condition was found to be worse, though the temperature was now 100°, and the pupils were less dilated and reacted to light. The ophthalmoscope, however, showed commencing optic neuritis.

On March 5th the first well-marked convulsion occurred, and this was followed by many others, five or six during the day. These consisted of tonic spasm of the limbs, and drawing up of the right side of the lip and nose; the right eye being tightly closed, and the left eye wide open. On two occasions only was consciousness said to be entirely lost. The symptoms were now regarded as pointing to an intra-cranial, and probably cerebellar, growth. On March 9th she was much prostrated, and it was found impossible to retain the iodide, the doses of which had been previously much diminished on account of vomiting. Stimulants were consequently given, with syrup of the iodide of iron, and inunctions of cod-liver oil. Later, there was some improvement, and the vomiting ceased. She passed her urine involuntarily, however, and the act was generally accompanied by one of the convulsive seizures described. The urine contained a trace of albumin, but was otherwise normal.

On March 25th, the ophthalmoscope showed advanced atrophy of both optic nerves, and by July 1st the patient was entirely blind. At the latter date she lay most of the time in a semi-comatose state, and had occasional attacks of *petit mal*. There was now paralysis of right side of the face, partial paraplegia, and paresis of the left arm. The following bulbar symptoms had also appeared: dulness, impaired articulation, difficult deglutition, and polyuria. There had been for some time a gradual enlargement of the head, and by August 1st there was some separation of the coronal and sagittal sutures. She failed steadily, and died August 17th.

At the autopsy, nine hours after death, the whole head was found very much enlarged; the frontal and parietal bones being very thin and separated at the sutures to a marked degree. The dura mater was very thick and distended, and, on puncturing it, a large quantity of clear fluid gushed out. The convolutions were flattened, and the whole brain was pale, flabby, and softened. The lateral ventricles were much dilated, containing a large amount of fluid, and the medulla was flattened, compressed, and softened. The optic nerves were small. Directly between the lateral lobes of the cerebellum there was found a large nodular growth, three inches long, one and a quarter inches wide, and one and a quarter inches in its vertical diameter. It was attached to the right lobe, occupying quite an extensive hollowed-out space in the lobe, and also extended into the fourth ventricle, pushed the medulla to the left, and pressed upon the right crux of the cerebellum. The microscopical examination of the tumor by Dr. Frank Ferguson, showed a large number of spindle cells, medium in size, imbedded in an abundant granular and fibrillated stroma, with a rich vascular supply. The walls, being composed of embryonic tissue, were quite thick, and gave the growth the appearance of angio-sarcoma. The tumor was cystic in places.

DR. GRAEME M. HAMMOND then read a paper on

THE PATHOLOGY OF TONIC AND CLONIC SPASMS.

The present paper, he said, was to be regarded as a preliminary one, to be followed by a second paper embracing the subject of spasm in all its details. On this occasion he proposed to consider spasm of cerebral origin, and due only to undoubted organic lesions. The only two forms of spasm which we can recognize at the present day are: 1, that in which the muscles affected are stiff, rigid, and contracted, to which the name of tonic or spastic spasm has been given; and, 2, that known as clonic or mobile spasm, in which the muscles are either the seat of regular and rhythmic contractions (tremor) or are affected with incoördinate, irregular movements, variously designated as chorea, athetosis, and ataxia.

In regard to the seat of the pathological lesion of spastic spasm all authorities are agreed that the condition is produced by an irritation situated in the white conducting nerve fibres of the motor tract; but in regard to the situations of the pathological lesions of mobile spasms the authorities are by no means so positive. Sharkey concurred in the opinion of Demarge, that mobile spasm in any form may be due to a lesion situated in any part of the motor tract, and other authors, such as Kohler and Pick, Ricci and Bidon, either coincided with this view or confessed that the subject was completely shrouded in obscurity; while Stephan located the lesion in the thalamus, and Charcot and Nothnagel in the thalamus and the posterior third of the internal capsule. It was in the hope of throwing a little more light upon the subject, Dr. Hammond said, that the present paper was written.

After some preliminary remarks on the selection of cases he took up each variety of mobile spasm separately; commencing with paralysis agitans. In this affection, as in all the other varieties of this form of spasm, except that due to disseminated sclerosis, he carefully excluded all those cases in which the lesions were so extensive as to make the cause of the spasm a matter of doubt. In 1883 Demarge reported a case in which the patient was suddenly seized with right hemiplegia, hemianæsthesia, and hemiparalysis agitans, where the autopsy showed two small foci of softening in the posterior portion of the lenticular nucleus, which, though bordering on the posterior third of the internal capsule, did not involve it in the slightest degree. In a case reported by Hamilton, in which the affection was limited to the right arm, a tumor was found limited to the substance of the left optic thalamus. In two cases reported by Parkinson and Oppolzer, respectively, there was found induration of the pons, medulla, and cervical cord. In a case reported by Dorvie there were miliary changes in the corpus striatum and hemispheres. In a case of Anton Herman's the only lesion found was a chronic meningitis. In a case reported by Galvagni in which hemiplegia of the right side was followed by ataxia when voluntary motion was attempted, and by tremor not unlike that of paralysis agitans, the only lesion discoverable was a spot of softening in the middle of the left optic thalamus. Of other cases of paralysis agitans reported, in some no lesion whatever could be found,

and in others multiple lesions were observed occupying the central ganglia, internal capsule, pons, cerebellum, and spinal cord.

In disseminated cerebral sclerosis it was very difficult to find cases, from the very multiple nature of the disease, where the symptoms of tremor on voluntary motion only could be attributed to an isolated lesion; yet a few cases of this description were on record. Having referred to cases of Demarge, Gray, and Sharkey, he mentioned one of his own, not yet reported, in which the patient began to notice that the left hand was gradually becoming weak and anæsthetic. Shortly afterward tremor was observed whenever he attempted to use the arm, and these symptoms slowly increased until, in about a year's time, the arm became useless from paresis, anæsthesia, and tremor. The patient died from pneumonia, and the autopsy revealed a spot of softness in the posterior internal part of the optic thalamus. Many cases, he said, were on record of lesions scattered throughout the white matter of the brain without involving the cortex or basal ganglia; but in all these there was either no tremor present or else the lesions involved the cell area of the pons.

In regard to the pathological anatomy of athetosis he said he had seen no reason to change the views expressed in his paper on that subject read two years ago before the New York Neurological Society, in which he reported nine cases of athetosis accompanied by autopsies. In three of these the lesions were confined to the corpus striatum, and in two to the optic thalamus. In three cases both these ganglia were involved, and in two the lesion was in the cortex, in the motor region. To these cases three more, collected by Stephan, could be added. In the first two there was softening in the optic thalamus, and in the third the lesion involved both the optic thalamus and the posterior part of the internal capsule.

Similar lesions had been observed in chorea of cerebral origin, either pre- or post-hemiplegic. Mitchell reported two cases in which the lesion was found in the corpus striatum on the opposite side, and Charcot three cases, in the first of which the lesion was situated in the posterior extremity of the optic thalamus, while in the second and third the posterior part of the caudate nucleus and the posterior part of the internal capsule were involved. Similar cases had been reported by Demarge, Reymond, Nacier, Sturgis, Stephan, and others.

The pathological anatomy of cerebral ataxia is in no wise different from that observed in athetosis and chorea. Gower reported a case in which the lesion was found in the left optic thalamus, and Demarge five cases in which the lesions were in the left lenticular nucleus, optic thalamus, and internal capsule, and in the right optic thalamus. Other cases reported by Reymond, Charcot, and others, only added to the number of cases, without indicating any other situations of lesions.

Taking these cases together, it can readily be seen that in all of them, without exception, the lesions were found constantly in three areas, viz., the cortex, the optic thalamus, and the corpus striatum. In a careful examination of all cases, it would be found that when the anterior two-thirds of the internal capsule are involved, spastic spasm is invariably present. In a case of Sharkey's, classified under the heading of disseminated sclerosis, which, beginning with tremor on one side, soon passed into a condition of spastic spasm, while a gradual onset of tremor occurred in the other side, both optic thalami were found involved, but only one internal capsule. Sharkey regarded all the symptoms as attributable to invasion of the internal capsule; but Dr. Hammond was of the opinion that only the spastic spasm, which was confined to one side, was produced by the lesion in the internal capsule, while the bilateral tremors were due to the implication of the optic thalami. While several cases had been reported of disseminated sclerosis, in which no tremor was observed, this was because the disseminated patches did not involve the basal ganglia or the cell area of the pons.

In conclusion, he said that from a study of these cases he could not agree with Demarge and Sharkey, that mobile spasm may be due to any part of the motor tract; nor with Stephan, that the lesion is in the optic thalamus; nor with Charcot, that it is in the thalamus, and, in addition, the posterior third of the internal capsule; but he believed that it may be produced by any lesion of an irritative nature situated in any part of the brain where nerve cells are located—these cells being located in the cortex, optic thalamus, corpus striatum, and pons; the difference in the form of the spasm, he thought, was one of degree, and not one depending on the location of the lesion; and it was, therefore, impossible from the symptoms to differentiate between a lesion of the cortex, optic thalamus, and corpus striatum.

DR. LANDON CARTER GRAY presented

A REMARKABLE CASE OF PROGRESSIVE MUSCULAR ATROPHY

in a male patient, thirty years of age. It is an instance of the so-called "juvenile type" of progressive muscular atrophy, as described by Erb, of Heidelberg, in 1884. It is, he said, the purest case—indeed, the only pure case—that he has ever seen; the limitation of the atrophy and hypertrophy being exactly as described by Erb. He believes that this is the first case that has been met with in this country, although a case of Dr. Putzell's, published in the *Reference Hand-book of the Medical Sciences*, was very closely akin to this type. It differed from it, however, in the distribution of the atrophy, in the presence of marked sensory symptoms, and in the onset of the disease with slight cerebral symptoms.

Dr. Gray stated that he has but little faith in this type-making business, because of the failures of the predecessors of Erb in this line, such as Hemptenmacher, Eichhorst, Zimmerlin, Leyden, and Moebius. He then went on to speak at some length of his reasons for believing that this type often merged into others.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, February 5, 1889.

THE PRESIDENT, GEORGE W. JACOBY, M.D., IN THE CHAIR.

DR. CHRISTIAN A. HERTER read a paper entitled

A STUDY OF EXPERIMENTAL MYELITIS.

The object of the paper was twofold; first, to show that it is possible to give rise to an acute localized myelitis in animals (cats, rabbits, dogs) by temporarily shutting off the blood supply of the spinal cord; secondly, to describe in detail the histological characters of the pro-

cess thus induced. Stenson's operation, as modified by DuBois-Reymond, was used to deprive the cord of its blood-supply. This consists in passing a curved needle through the abdominal wall on one side of the vertebral column, and bringing it out on the other, in such a manner as to include, among other structures, the aorta and vena cava. The needle carries a strong ligature, which is tied so tightly over the back of the animal as to compress effectually the abdominal vessels. The spine of the fourth lumbar vertebra is the level at which the needle is passed. The effect is to produce an almost instantaneous paraplegia. If compression be exercised for a shorter time than three-quarters of an hour, the paralysis wears off rapidly; if for more than an hour, it becomes permanent and does not diminish during the life of the animal.

In these cases lesions of the cord, peripheral nerves, and muscles could regularly be detected shortly after the operation. Pathological changes were visible in the anterior horns of the fifth and sixth segments as early as twenty-four hours after the operation. In a few ganglia cells the cell-body was pale and swollen, and the nuclei were obscured. Twelve hours later, a larger number of cells was involved, and many had lost their processes, and, in some instances, their nuclei. After a lapse of seventy-five hours, the necrotic changes in the ganglion cells were much more intense, and involved, at least to some extent, about one-half of the cells in each section. In consequence of these changes in the ganglion cells, the anterior nerve roots had undergone partial degeneration. Sections stained by Weigert's method showed that the fine network of medullated fibres of the gray substance was also distinctly altered in places. Many of the vessels and perivascular spaces showed evidence of inflammatory change. By the end of the sixth day, the inflammatory process was much more advanced. Twelve days after the operation, no normal ganglion cells could be found in the fifth and sixth lumbar segments. After thirty days, the nervous elements of the central gray were all but completely destroyed. In a majority of sections from the most diseased region, no ganglion cells could be detected. Nothing remained of the network of medullated fibres. The anterior horns were completely degenerated. The posterior nerve-roots were infiltrated with small round-cells, as was also the intervertebral ganglion. The spinal nerves derived from the diseased portions of the cord underwent degeneration closely resembling that occurring in distal parts of divided nerves. Interesting changes were found in the muscles. Hemorrhages into the perimysium were visible in the first week. By the sixth day, a curious condition of vacuolization was found in individual fibres which, by the thirtieth day, could only be detected here and there. At this time, the majority of the fibres had undergone simple atrophy, and coincident with this change there was hyperplasia of the interstitial connective tissue. Many of the larger fibres had undergone granular degeneration. In long-standing cases, the bladder was the seat of great muscular hypertrophy and connective tissue hyperplasia. In non-pregnant females, the mucous membrane of the uterus was regularly the seat of hemorrhagic infarctions. In Stenson's experiment, we have a method of inducing a form of myelitis in animals which, in certain stages, bears a close resemblance to processes which occur in man. This fact suggests that interference with the blood-supply of the human spinal cord may be an etiological factor in some varieties of myelitis. A few cases have been recorded which justify the suspicion that embolism of the spinal cord can give rise to an acute myelitis, and it is not improbable that other causes of vascular obstruction may produce the same effect.

DR. HEITZMANN felt that he could discuss the subject of myelitis intelligently, after having studied it twenty-five years. Experimental myelitis had been the object of much careful work in his own laboratory by Emerson, Rockwell, and Boyer. The results of their work had been published in this country, and he wondered why Dr. Herter had ignored them. He could understand the writer's taking the ground of his teacher that there is an emigration of leucocytes, and not a proliferation of neuroglia cells. Why was Cohnheim ignored? In the drawings accompanying the paper he had noticed œdema very distinctly, but Dr. Herter had not mentioned its presence. This œdema was, no doubt, the cause of the change in shape of the central canal. In his opinion, the gray matter itself furnishes most of the corpuscles which Dr. Herter called leucocytes. This he had learned from his own laboratory work, and Robinson had shown twenty-five years ago, by producing inflammation in the sympathetic ganglia, that the ganglion cells plainly break up into these corpuscles. They are not replaced by leucocytes, but through nutritional changes fall back into embryonal conditions. What right have we to speak of connective tissue in the gray substance? It is protoplasm full of activity. To show these changes osmic acid, bichromate of potash, and chromic acid should be used, and not alcohol, which he supposed the author had employed. There is not a single proof that leucocytes, even if present, ever form connective tissue. As to the myositis, he supposed the author would refer that too to emigration of leucocytes into the perimysium.

DR. SACHS thought that the point of greatest importance established by the author was that the cells of the anterior horns are the first to be changed. The theory of Strümpell and others as to the infectious nature of some spinal cord diseases, might often be explained, perhaps, by vascular changes. Possibly bacterial occlusion of spinal vessels might cause acute poliomyelitis. The muscular changes described by the writer were different in man. In animals vacuolization was early, but in man after long-continued chronic disease of the muscles.

DR. MARY PUTNAM JACOBI was particularly struck by the apparent identity of symptoms produced by cutting off the blood supply, and by furnishing blood in excess. Some of the older experimenters had occluded arteries by the injection of powders. The author's contribution confirmed Ranvier, that the first step in inflammation was change in nutrition. The question had occurred to her, whether all these vascular alterations were not the immediate result of loss of directive power over the bloodvessels by the cells which govern.

DR. JACOBY had examined Dr. Herter's specimens microscopically, and there was no doubt as to the changes in the posterior roots. He did not think the alterations in the muscles were properly vacuolization, not such as in Wagner's specimens, which he had also seen. It was a question if all the changes were due to the cord lesion.

DR. HERTER closed the discussion. As to Dr. Heitzmann's criticisms, to answer him would involve a reconsideration of the whole question of inflammation, as his

views upon that subject seemed to be so sweeping and revolutionary that they would require more examination and thought than he was able at the time to give them. His specimens were many of them examined in the fresh state, and some after hardening in Müller's fluid. They were not treated with alcohol. As to there being no connective tissue in the spinal cord, this was at variance to the generally accepted ideas, and it was difficult for him to conceive of its absence. He knew of the experiments referred to by Dr. Mary Putnam Jacobi, but thought they were confined more to the study of grosser effects and lesions, and not to the study of microscopical changes.

DR. SACHS then presented a case of

HEMIPLEGIA WITH REMARKABLY PERFECT ASSOCIATED MOVEMENTS

on the paralyzed side. It was a young man of twenty-three, who had infantile hemiplegia at the age of one year, as the probable result of a fall. The paresis, contractures, and exaggerated reflexes of the left side, were the remnants of this early attack. He also described a second case, who failed to put in an appearance at the meeting, a girl of twelve, whose early history was very obscure, but whose physical symptoms pointed to a similar attack in early life. Both cases presented the marked peculiarity that all the movements of the sound arm and hand were imitated by the paretic members, and *vice versa*. The same was true to a less degree of the lower extremities. In Case I. if he attempted to raise his left arm the right would also be raised; in lifting a glass from the table with his left hand, the right would perform the same movements. They were very marked in buttoning or unbuttoning his clothes, when the paretic hand would make the same motions, In Case II. these delicate movements were also present, but the grosser kinds were not imitated by the paretic hand.

Some charts, designed by Dr. Peterson, were exhibited to show the resemblance between the original and the associated movements. They were copies of zigzag lines made by the patient on a horizontal blackboard with a piece of chalk in each hand. Dr. Sachs remarked that it was difficult to explain these associated movements, and that it was curious that the very members of our bodies, which are innervated from our earliest days, should perform associated movements in disease. It was supposed by some that inhibition having been removed by cortical or intra-cerebral disease, the natural tendency to bilateral movements returned, and that the paretic hand was moved from the sound half of the brain. There were numerous objections to this theory, and it could not explain the associated movements of the sound hand when attempts were made to move the paretic hand. The speaker thought it more probable that an irradiation takes place lower down in the central nervous system, either in the pons, medulla, or even in the spinal cord, and that these associated movements are to be regarded as imperfected reflected movements. He did not think that such movements could be explained by the supposed existence in many persons of an unusually large number of uncrossed motor nerve fibres.

DR. HERTER asked if there were athetosis and atrophy in the cases, and was answered that there was as much atrophy as usual in cerebral cases, but no athetosis.

DR. LESZYNKSY had noticed in such cases that when the attention of patients was directed to the paretic hand these associated movements occurred, but not otherwise.

CORRESPONDENCE.

ON THE CLINICAL APPLICATIONS OF BARIUM.

To the Editor of THE MEDICAL NEWS,

SIR: In your last issue, Dr. Hobart A. Hare appears with an interesting paper on the clinical applications of barium. He quotes the opinions and observations of foreign physicians only, thereby implying that on this side of the Atlantic the remedy is ignored or is unknown. If he will kindly refer to pages 229–231 of a *Treatise on Materia Medica and Therapeutics*, by Roberts Bartholow, M.D., sixth edition, he will find a tolerably full account of the actions and uses of barium. Dr. Hare cannot be expected to look over old editions of this book, and, therefore, I take the liberty to acquaint him with the fact that an article on barium was inserted in the fourth edition of this work, published in 1881. The following sentence gives a summary of the views held by the author of the work above referred to, on the subject of the uses of barium:

"Barium chloride has proved useful in hemorrhage, acute congestion of organs, atony of the bladder, atony of the intestines with deficient secretions, and in weakness of the heart with low arterial tension, and for effecting the removal of inflammatory exudations," etc.

To this statement I can add some recent personal experience: Barium chloride has proved to be remarkably successful in *the treatment of varicose veins*. Within the past few years various cases of *aneurism* have been reported in current medical literature cured by it.

As during the whole time of my residence here I have included an account of barium in my regular annual course of lectures, both didactic and clinical, the students of Jefferson Medical College can testify as to the accuracy of the above, if further testimony be necessary.

ROBERTS BARTHOLOW, M.D.

PHILADELPHIA, Feb. 18, 1889.

OPERATIVE PROCEDURES IN HYPERTROPHY OF THE PROSTATE.

To the Editor of THE MEDICAL NEWS,

SIR: *Apropos* of an article in THE MEDICAL NEWS of Jan. 19th, under the title "Operative Procedures in Hypertrophy of the Prostate," I make the following report:

J. G., a large fleshy man, aged seventy-nine, an engineer by profession, applied to me December 15th for relief from retention of urine. He had been subject to attacks of dysuria for many years, and in the summer of 1887 had fallen astride of the gunwale of a boat and bruised his perineum to such an extent as to produce a traumatic stricture, which closed the urethra to the introduction of the smallest instrument. The urine, however, had continued to dribble through with increasing difficulty, until the date of his application to me, when the retention had become almost complete.

On examination the prostate was found to be as large as a good size orange, filling the rectum to the obstruction of gas, as well as feces, the distended bladder, of course, assisting. The perineum was very deep, and

showed the results of the injury it had received, by an induration which extended from the bulb to the apex of the prostate. He could retain nothing on his stomach, and seemed to be suffering as much from obstruction of the bowels as from the retention of urine. What little urine he passed was slightly alkaline, but otherwise normal in every respect; in fact, there was no evidence that the kidneys had been affected by the obstruction to the flow of urine, which, from his account, must have existed to a greater or less extent for at least fifteen years.

The question was, What to do with him? Perineal section without a guide in the disorganized condition of the parts would prove to be a formidable undertaking. To "tap the bladder through the perineum and the enlarged prostate quite independent of the course of the urethra," considering the size of the prostate, I was not inclined. Aspiration would afford only temporary relief.

It seemed to be one of the few cases in which it is justifiable to open the bladder above the pubis. Accordingly in the presence and with the concurrence of Doctors George A. Sterling and W. H. Perdomo, a free opening was made with a bistoury through a thick layer of fat, almost down to the bladder, into which an ordinary trocar was then thrust, and the water drawn slowly off. A soft catheter was then introduced through the canula and retained. In addition to the relief of the bladder symptoms the patient was immediately able to pass a quantity of flatus which had distressed him greatly. Two days after, in a moment of irritation, he removed the catheter, which I was not able to introduce, the bladder being collapsed. The urine, however, passed freely through the opening without extravasation, a fact due to the size of the external wound, as I think, and continued to do so for a week, All this time he would have been very comfortable, but for the obstruction of the bowels. He could pass flatus but no feces, and retained nothing that he took into his stomach.

At this time the opening closed and the symptoms of retention reappeared, but were not so marked as before the operation. Three days later it reopened and the urine continued to flow through it until the patient's death, which took place on January 5th, eighteen days from the date of the operation.

On January 4th, the urine ceased to be secreted and he fell into a quiet stupor, breathing easily, without stertor. Soon afterward his breath took on a decidedly urinous odor, and there appeared on his nose, cheeks and side-whiskers, a copious white deposit, which I took to be urate of soda, though I had no means at hand to determine the fact. There was some about the mouth, or the under part of the nose, possibly because of the warmth and moisture of the breath. It continued for several hours and then ceased to form. On being wiped off, it did not reappear.

At the autopsy, the bladder with the exception of a slight thickening of the walls, was found to be in a sufficiently healthy condition, but the third lobe of the prostate projected into it at least an inch and a half. This was sessile, but soft and pendulous, and had a tendency to fall over toward the neck of the bladder in such a way as to block it up completely. The enlargement in this as well as in the other portions of the enormously developed glands, was simply hyperplasia with no heterogeneous elements in it.

There were no signs of extravasation of urine, or peritonitis. The suprapubic opening had evidently taken on the characteristics of a fistula with a living membrane of its own. The kidneys were not examined; partly from deference to the almost universal objection on the part of country people to the mutilation of the dead for scientific purposes, and partly from the fact that no symptoms referable to these organs had shown themselves until the last moment.

Now this man evidently did not die from the effects of operation. There was no shock. No rise of temperature. No extravasation or peritonitis. No signs of septic influence, unless the uræmia of the last twenty-four hours be classed under that head, and I do not think that the operation was to blame for that. He died of starvation, and the suprapubic opening in relieving him of the retention did all that any elaborate operation could have done, (I shudder at the thought that somebody might suggest colotomy). At the time of his death his bowels had not acted for nearly a month, and for three weeks he had taken nothing more nourishing than a little champagne and seltzer water. An injection thrown past the prostate was held by it as by a valve, and gave him so much distress that it was not repeated During this time he must have lost at least seventy pounds. He lived upon himself, a diet so largely nitrogenous as possibly to account for the accumulation of urates which took place toward the last.

The white deposit mentioned, I have never seen before, nor do I remember to have seen such a case reported.

J. H. ROGERS, M.D.

SAG HARBOR, LONG ISLAND, Feb. 11, 1889.

NEWS ITEMS.

Pharmaceutical Explosions.—According to the *Farmatzevtitchesky Jürnal*, December 4, 1888, a sad accident recently occurred in the shop of a St. Petersburg chemist. A powdered mixture, consisting of an ounce of chlorate of potassium and one drachm of tannic acid, was ordered by a physician who probably had forgotten his chemistry. The chemist, who also ought to have known better, set to work to dispense the prescription, and was punished for his ignorance by a violent explosion of the incompatible substances. His hands were severely burned, and his beard and eyebrows were singed off. He was only able to resume his occupation several weeks afterward. A similar accident occurred about two months before at Warsaw, where a chemist tried to prepare a mixture consisting of chlorate of potassium, tannic acid, and oil of peppermint.—*Brit. Med. Journ.*, Feb. 2, 1889.

Corrigendum.

DECUSSATION OF FIBRES OF VOLUNTARY MOVEMENT.

In our issue of February 9th, page 160, the first and second conclusions on this subject reached by Dr. Brown-Séquard were stated as the reverse of what they should have been.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

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